DOCUMENT RESUME

ED 418 342 CG 028 357

AUTHOR Rubin, Sarah; Cunniff, Catherine
TITLE "I Would Have Taught You Differently": Bringing an Understanding of the Economy into the Schools. Alliance for Achievement.
INSTITUTION MDC, Inc., Chapel Hill, NC.
PUB DATE 1996-00-00
NOTE 51p.
AVAILABLE FROM MDC, P.O. Box 17268, Chapel Hill, NC 27516-7268; phone: 919-968-4531; fax: 919-929-8557 ($15).
PUB TYPE Information Analyses (070) -- Reports - Descriptive (141)
EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Community Colleges; Economics Education; *Education Work Relationship; *Educational Benefits; *Educational Improvement; Educational Objectives; Educationally Disadvantaged; High Schools; School Community Relationship

ABSTRACT

This report offers ideas for expanding schools' partnerships with employers. These partnerships can raise academic achievement, college-going rates, and career-awareness for low-income and minority students. Topics include a discussion of the school-to-work movement and career guidance; raising awareness through workplace visits; summer internships; staff development; studying the local labor market; ideas for classroom visitors and activities; entrepreneurship education; making choices. The introduction presents a rationale for building alliances bettween schools and employers. Chapter 2 describes learning experiences for school staff, including workplace visits, and summer internships. Chapters 3 and 4 present learning experiences for students in the workplace and in the classroom, while Chapter 5 discusses ways to integrate career and educational guidance into the school. Chapter 6 presents 3 mini-case studies in building school-employer partnerships. Schools and programs are indexed. Contacts and resources are appended. (EMK)

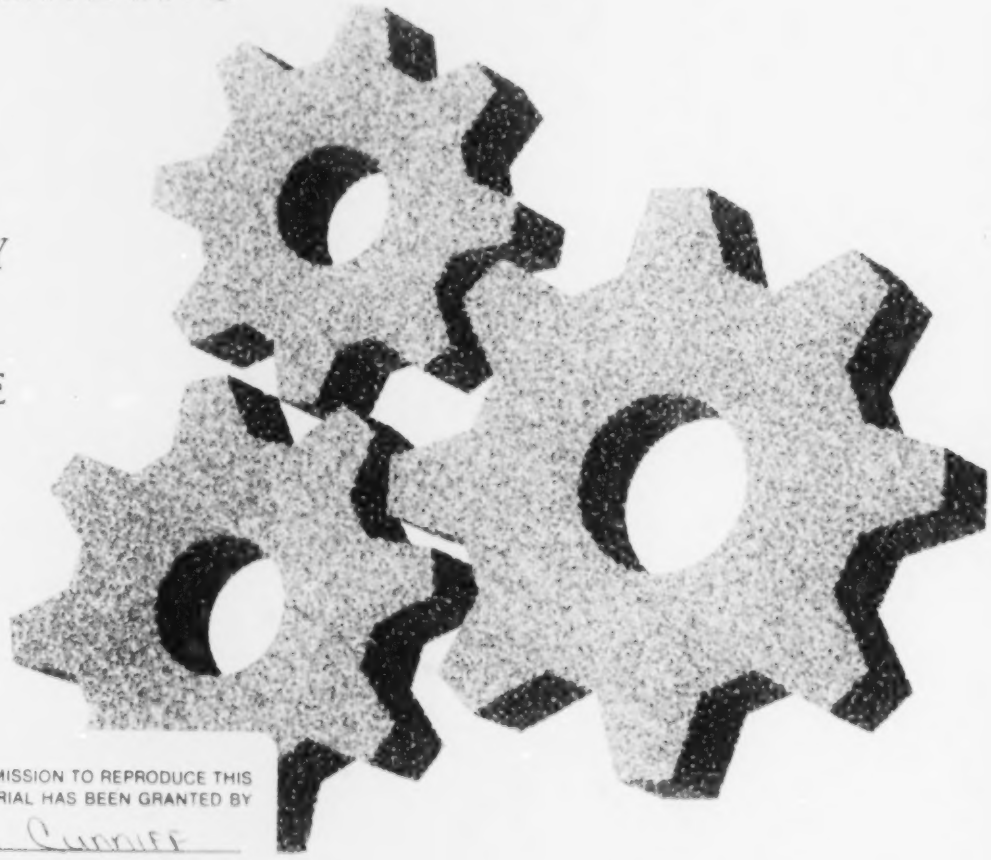
****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

CG

ED 418 342

"I WOULD HAVE TAUGHT YOU DIFFERENTLY"

BRINGING AN UNDERSTANDING OF THE ECONOMY INTO THE SCHOOLS



U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

S. Cunniff

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

MDC

ALLIANCE FOR ACHIEVEMENT

CG028357

BEST COPY AVAILABLE

MDC works to expand the economy, develop the workforce, and increase per capita income in communities across the country, with a special focus on the South. Established in 1967 to help North Carolina make the transition from an agricultural to an industrial economy and from a segregated to an integrated workforce, MDC has spent the last 30 years publishing research and developing programs to strengthen the workforce, foster economic development, and remove the barriers between people and jobs. Since its 1988 publication of *America's Shame, America's Hope*, a study of how the educational reform movement failed at-risk youth, MDC has launched several projects to assist middle schools, high schools, and community colleges with the strategic planning, leadership development, and capacity building they need to increase educational and career options for low-income and minority youth.

The Alliance for Achievement set out in 1992 on a four-year quest to raise the academic achievement, college-going rate, and career opportunities of low-income and minority students in economically distressed communities throughout the South. Funded by DeWitt Wallace-Reader's Digest Fund, The Pew Charitable Trusts, and BellSouth Foundation, the Alliance launched collaborative "school-to-college-and-career" initiatives in six communities, managed by teams from local middle schools, high schools, and community colleges. Over the life of the project, team members helped forge partnerships among schools and employers on behalf of four objectives: more rigorous curricula, better career education, more parental involvement, and more effective academic and career guidance. The funding of the Alliance program ended in late 1996, but the Alliance-inspired teams and initiatives continue.

This report was written by Sarah Rubin and Catherine Cunniff. Special thanks to four Alliance for Achievement sites whose career awareness and school-to-work programs are highlighted in this report: Johns Island, South Carolina; Louisville, Kentucky; Stone County, Mississippi; and Wilmington, North Carolina.

Additional copies are available for $15.00 from:

MDC
P.O. Box 17268
Chapel Hill, NC 27516-7268

phone (919) 968-4531
fax (919) 929-8537

www.mdcinc.org

"I WOULD HAVE TAUGHT YOU DIFFERENTLY"

BRINGING AN

UNDERSTANDING

OF THE

ECONOMY

INTO THE

SCHOOLS

MDC

1996

ALLIANCE FOR ACHIEVEMENT

4

CONTENTS

Preface

I. **Introduction** 1
The school-to-work movement and career guidance 1
Bringing an understanding of the economy into the schools 3

II. **Raising Awareness — Teachers, Counselors, Administrators** 7
Workplace visits 7
Summer internships 9
Other staff development activities 10
Gathering data on the labor market 11

III. **Workplace Experiences for Students** 13
Workplace visits 13
Service learning 16
Youth apprenticeship 17

IV. **Experiences in the Classroom** 21
Adult visitors in the classroom 21
Applied learning activities 23
Entrepreneurship education 24

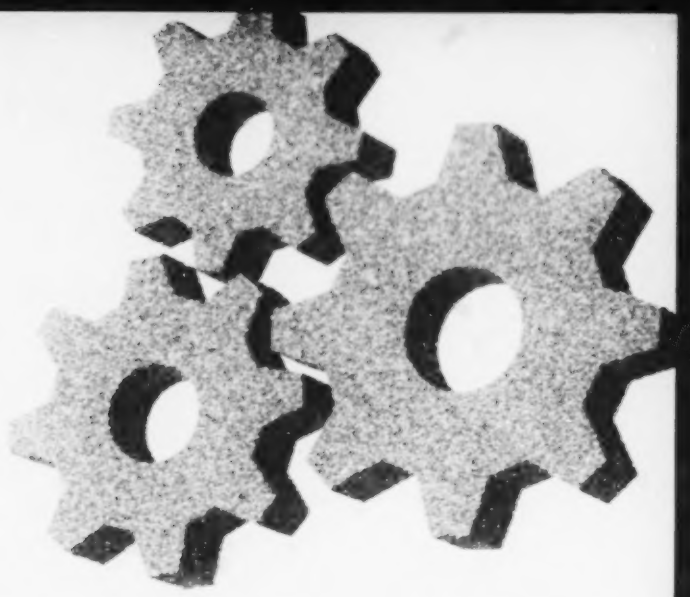
V. **Career Guidance: Making Choices, Keeping Options Open** 25
Alliance for Achievement principles for career guidance 27

VI. **Building School-Employer Partnerships: How Three Communities Did It** 33
Wilmington: Starting Small... Then Growing 33
Fort Worth: Citywide Approach 35
Guilford County: Community College Partnership 36

Index of Programs and Schools 39

Appendix: Contacts and Resources 43

PREFACE



The Alliance for Achievement set out to raise academic achievement, college-going rates, and career awareness for low-income and minority students in Southern communities. It began by forging partnerships among middle schools, high schools, and community colleges. This report was circulated to Alliance schools in draft form to offer ideas for expanding their partnerships with employers. Several Alliance schools responded by developing innovative strategies, using the local economy as a "learning lab" to introduce students to career opportunities.

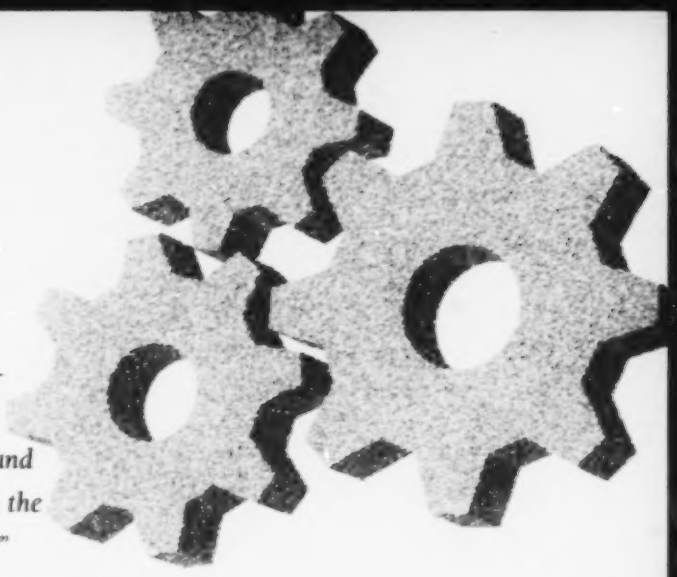
This report draws on the experience of the Alliance schools and some two dozen other efforts around the country. It describes many approaches taken by schools — with help from employers — to raise students', teachers', and counselors' understanding of the local economy.

MDC hopes this report will be useful to a variety of people: educators concerned with career and educational guidance; staff and board members of business-education partnerships; high school and community college staff who run school-to-work and tech prep programs; policymakers and school change advocates who seek to promote the Alliance vision of high academic achievement and keeping postsecondary options open for all students.

In the Introduction, readers will find a strong rationale for building alliances between schools and employers. Readers seeking programmatic models to adapt for their schools will find a wealth of ideas in Chapters II through V. Chapter II describes learning experiences for school staff, including workplace visits and summer internships. Chapters III and IV present learning experiences for students in the workplace and in the classroom, while Chapter V discusses ways to integrate career and educational guidance into the school.

Readers interested in the process of building school-employer partnerships — how they evolve, the roles different institutions can play — can turn to the three mini-case studies in Chapter VI. The Index lists all the programs profiled, noting the key elements described and page references. The Appendix lists people to contact for more information on each program highlighted in the report.

I. Introduction

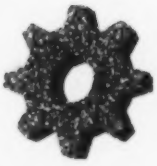


Touring a high-tech laboratory, a high school teacher encountered one of her former students who was now an entry-level technician. The young man was working with Pareto charts and Statistical Process Control. The teacher said, "If I had known the workplace was like this, I would have taught you differently!"

That teacher returned to her classroom and began teaching differently. She asked her students to work in teams; she devised assignments with real-world applications; she challenged students to tackle complex problems that drew on interdisciplinary skills. And she began inviting working adults into the classroom to share their experiences with students.

Too often, neither students nor teachers have a solid understanding of the links between school and work. Students wonder why they have to study algebra, for example, and many teachers cannot provide a satisfactory answer. They know algebra is an important prerequisite to higher-level math, but they do not know how students might need to apply algebra skills in the workplace. Neither students nor teachers realize how highly employers value skills like teamwork and problem-solving in hiring entry-level workers. And students, teachers, and counselors alike are unaware of the growing number of career opportunities that require a two-year community college degree.

Schools need to understand the implications of national workplace trends; they also need to know their local or regional economy. Young people who will begin their careers locally need to be familiar with local opportunities and career paths. For all students, the local economy is the ideal learning lab to gain awareness of contemporary workplace expectations and opportunities. By building relationships with local employers, schools can create real-world learning opportunities for their students.



The School-to-Work Movement and Career Guidance

When the Alliance for Achievement started in 1992, "school-to-work" was the passion of a small group of educators and policymakers who urged American schools to devote more attention to preparing students for the workplace. They believed this was important both for the sake of young people — especially those who did not plan to attend four-year college — and for the sake of our economy, which needs more skilled workers to remain competitive.

Since the passage of the School-to-Work Opportunities Act in 1994, a new philosophy has begun taking root in many communities.

Federal school-to-work grants, passed through from states to communities, have provided an incentive for schools to build partnerships with employers. Schools have developed work-based learning opportunities (from job shadowing to apprenticeships), and have started to integrate academic and vocational instruction. Some school districts have restructured secondary education, requiring all students to choose a career path and take an academically rigorous curriculum.

In some places, school-to-work is just a new twist on vocational education. In other places it is truly transforming schools, helping them prepare young people not just for the next level of coursework or for four-year college, but for life and work. In more and more communities employers have joined with schools to provide support for better education.

Paralleling the growth of school-to-work has been a lower-profile movement emphasizing career guidance for young people. The National Occupational Information Coordinating Committee has promulgated the *National Career Development Guidelines*[1] with benchmarks detailing what people of all ages, from kindergarten through adult, should know about making career decisions. Many middle schools now offer career education classes; many middle and high schools have on-line career information databases and provide vocational interest tests.

Despite this new emphasis on guidance, many students still set unrealistic career goals or set themselves up for failure because of inadequate preparation. The Lilly Endowment's *High Hopes, Long Odds* study (see sidebar, p.25) found that 59% of Indiana's 12th graders plan to be working as professionals at age 30. This includes nearly 40% of the students enrolled in general education programs and 20% of those enrolled in vocational programs, even though neither of these programs prepares students for professional careers. Many of the students in these two programs say that they plan to take academic courses in college, but it is unlikely that they will have the high school background to do well in these courses.

Guidance remains a weak link in most middle and high schools. By and large, it is the responsibility of a few guidance counselors, each assigned 500 or more students, who have their hands full maintaining school records, helping with college applications, and intervening when students experience emotional or family problems. This leaves the majority of students — those with vague post-high school goals, those whose parents are not providing helpful guidance about college or career — floundering.

Even the new school-to-work initiatives that give students more exposure to career options through career classes, job shadowing, internships, and other means too often fail to provide meaningful guidance to students. That will happen only when career guidance becomes the responsibility of more adults such as teachers through advisor groups, adults in the community through mentoring programs.

[1] The most recent edition is *National Career Development Guidelines. K-Adult Handbook 1996*, edited by Linda Kobylarz and published by the NOICC Training Support Center, 1500 West Seventh Avenue, Stillwater OK 74074-4364.

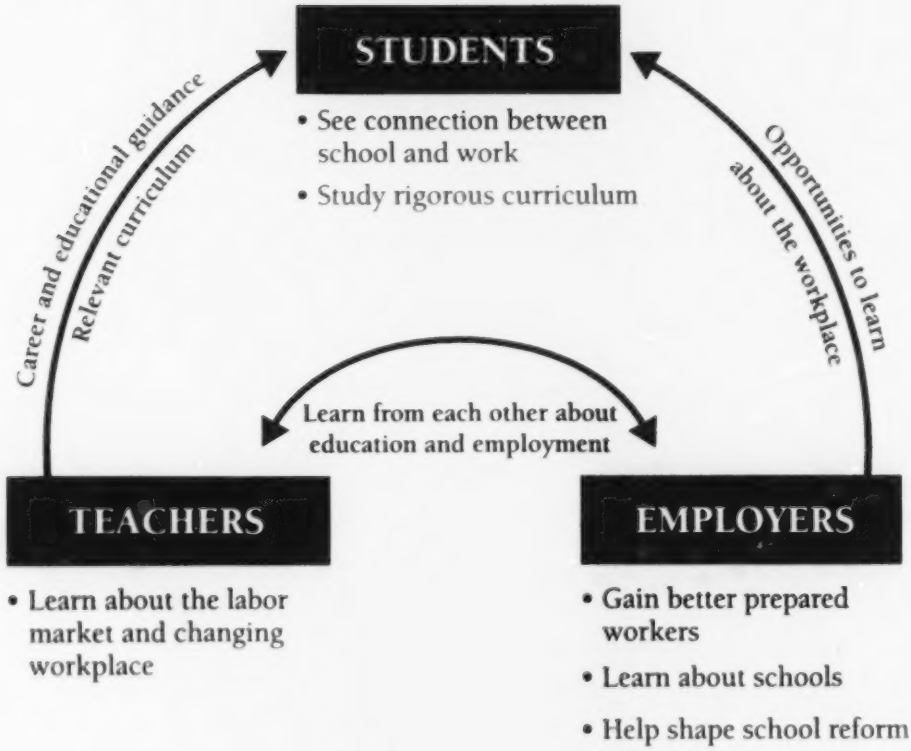
Bringing an Understanding of the Economy into the Schools

A survey of 37,000 young people done by the National Assessment of Education Progress in the early 1990s found that only 2.2% considered school or academic activity to be useful in getting or keeping a job.[2] Clearly, schools need to do a better job of showing students the link between academic achievement and life after high school. Young people will begin to see that connection when their education includes three essential elements: meaningful **career and educational guidance**; opportunities to **learn about the workplace** through first-hand experience; and **relevant curriculum** that teaches skills demanded by the high-performance workplace.

Ultimately, that kind of school experience can help motivate students to stay in school and achieve by showing them the connection between what they study and their future place in the economy. It can equip students to make good choices regarding education and career plans. And it can prepare students to succeed whether they go to work directly after high school or attend college first. (See Figure 1.)

None of that will happen unless teachers and counselors themselves are knowledgeable about the local job market and the changing workplace. They need to be prepared to provide career and educational guidance that is grounded in reality. They need to develop curriculum and instructional methods relevant to the changing demands of the workplace, for instance, by incorporating applied learning techniques and the SCANS competencies (see sidebar) into the classroom.

Figure 1


STUDENTS
• See connection between school and work
• Study rigorous curriculum
Career and educational guidance
Relevant curriculum
Opportunities to learn about the workplace
Learn from each other about education and employment
TEACHERS
• Learn about the labor market and changing workplace
EMPLOYERS
• Gain better prepared workers
• Learn about schools
• Help shape school reform

A good starting place for schools seeking to raise awareness about the economy is to build relationships with employers. These relationships can be powerful both at an individual level — for students, teachers, and counselors — and the institutional level, as a

[2] Public/Private Ventures, *Finding One's Way: Career Guidance for Disadvantaged Youth*, 1993. Available from the U.S. Department of Labor, Office of Strategic Planning and Policy Development, Washington, DC.

force for school reform. At the individual level, when young people have positive interactions with employers — through job shadowing, internships, mentor relationships, and employer visits to the classroom — they begin to see the connection between school and work and often become motivated to do better in school. When teachers visit workplaces and talk with employers, they understand the importance of including teamwork and problem-solving activities in the classroom. They often get ideas for designing class projects based on real-world problems. In addition, they are better able to counsel students about career choices based on first-hand observation and knowledge of opportunities in the local economy.

At an institutional level, business-education partnerships have been powerful forces for change in many communities. These partnerships often have grown out of businesses' concern that young people are not adequately prepared for entry-level jobs. They have raised public awareness of the new demands of the high-performance workplace and have used this to shape major school reform efforts.

In addition to links with employers, schools can benefit from awareness of data on economic trends. Local and regional labor market information is available from a variety of sources but is seldom tapped by schools. The more teachers and counselors know about the labor market — which occupations are growing, what education and training they require, etc. — the better guidance they can provide to students.

The programs described here are about change in the schools, but partnerships between schools and employers often spark change in the workplace and the community as well. At best, these partnerships result in a sense of shared responsibility on the part of employers and schools to support young people as they move from school to adulthood and career. The report describes how business participation in community-based SCANS studies has resulted in broad public support for school reform, including integration of academic and vocational education and eliminating tracking in high schools. It also notes how programs that encourage workers to volunteer in the schools or host student interns at the workplace have boosted employee morale.

The SCANS Reports

The Secretary's Commission on Achieving Necessary Skills (SCANS) was appointed by the U.S. Secretary of Labor in 1990 to examine the skills that young people need to succeed in today's workplace. The Commission engaged private businesses, public employers, labor unions, workers, schools, and parents in an in-depth study which resulted in recommendations to schools and employers.

The Commission identified five generic competencies required for success in today's workplace: the ability to identify, organize, plan, and allocate *resources*, *interpersonal* skills, ability to acquire and use *information*, understanding of the complex interrelationships that comprise *systems*, and the ability to use *technology*.

Underlying those competencies are a set of foundation skills that SCANS believes all students should learn in school. These foundation skills include:

- Basic Skills: reading, writing, math, listening, and speaking
- Thinking Skills: creative thinking, decision-making, problem-solving, seeing things in the mind's eye, knowing how to learn, reasoning
- Personal Qualities: responsibility, self-esteem, sociability, self-management, integrity, and honesty

SCANS issued a series of reports making far-reaching recommendations to both schools and employers. It advocated "reinventing schools" to teach the foundation skills and competencies listed above; it called on employers to teach these skills to adults already in the workplace, and it urged employers to reorganize their workplaces, moving toward the "high performance" mode that characterizes the most competitive companies.

Some of the school change efforts described in Chapters II-IV of this book are rooted in the SCANS study. They include Fort Worth's C[3] collaborative (p.11), Omaha 2000 (p.11), initiatives in Concord-Cabarrus County, NC (p.12), and School-Work Plus, a SCANS-type study conducted by high school students (p.15).

For more information on the Commission's findings and recommendations, see Secretary's Commission on Achieving Necessary Skills, *What Work Requires of Schools* (1991) and *Learning a Living: A Blueprint for High Performance* (1992), U.S. Department of Labor, Washington, D.C.

As school reform increasingly relies on school-employer partnerships and pressure to prepare young people for the high-performance workplace, what happens in small towns and rural communities where there are few employers and even fewer that use 21st century modes of operation? It is essential to stretch young people's horizons beyond the opportunities in their immediate community. Rural schools should take students to visit high-tech workplaces in a nearby city. They should form alliances with employers not just in their own county but in their region or labor market area. At the same time, rural schools should recognize the value of teaching entrepreneurship and agriculture-related skills that can empower young people to choose self-employment or small business ownership as a career.

No matter what type of community you live in — from a rural county with one high school to a metropolitan area with a diverse, high-tech economy, the schools can find ways to introduce young people to careers, broaden their horizons, and keep the options open for all students by preparing them for postsecondary education.

A Quiz: How Much Do You Know about Jobs in Your Local Economy?

(answers at bottom of page)

The bottom line: How are employment and earnings tied to education?

1. In 1979, a high school graduate earned $1,700 more, on average, than a dropout. By 1995, that amount had increased to $_____.
2. In 1979, a college graduate earned $8,500 more, on average, than a high school graduate. By 1995, that amount had increased to $_____.
3. In 1995, an adult with a 2-year college degree working full-time, year-round earned an average of:
   a. $18,500
   b. $24,800
   c. $29,200
   d. $33,400.
4. In 1994, the average U.S. unemployment rate for college graduates was 2.9%. What was the rate for high school graduates? High school dropouts? (What are the rates in your community?)

Changing job opportunities

5. Name 3 occupations in your community or region that require 1-2 years of postsecondary education and pay over $20,000 starting salary.
6. What are some of the high school courses that are prerequisites to prepare students for these occupations?
7. Where in your community or region can one get training for these occupations?

Quiz Answers

1. $7,400
2. $22,000
3. d. $33,400
4. High School Graduates – 6.7%
   High School Dropouts – 12.6%
5, 6. Sample answers:
   Medical Technician – Algebra 1, Biology, Chemistry
   Auto Mechanic – Algebra 1, Physics, Chemistry
   Electronics Technician – Algebra 1 & 2, Physics
7. A public 2-year community or technical college

II. Raising Awareness– Teachers, Counselors, Administrators

"Teachers have to see their role not as 'getting kids through my class' but getting kids into adult life successfully. And this can't be done without involving the community."

Jon Snyder, Graduate School of Education, University of California at Santa Barbara

If teachers, counselors, and other school staff are to take on the charge of getting kids into adult life successfully, they need to know more about what it takes to be successful in the contemporary workplace. As the SCANS study found, the high-performance workplace has brought about radical change in employers' expectations, even for their entry-level workers. There are new occupations — including many that require a two-year technical degree — that most adults are barely aware of.

When teachers and other school staff have opportunities to learn about the new workplace, their reaction is invariably enthusiastic. They get ideas that can improve the way they teach, counsel students, or manage the school. Active, experiential learning — visiting workplaces, interviewing workers in a variety of occupations — is a particularly powerful form of learning for school staff, as it is for young people. This chapter describes programs that arrange workplace visits and summer internships for teachers and other school staff. It describes other types of staff development activities and ways that communities have brought an awareness of labor market information to the schools.

Workplace Visits

Arranging visits to workplaces is a simple but potentially powerful way to open the eyes of teachers and other school staff to the new realities of the workplace. To be effective, a visit should be more than a plant walk-through and a speech by a personnel director. It should include ample opportunity for one-on-one conversations with workers in a variety of positions, including supervisors and personnel staff. The visit may be preceded by brainstorming a list of questions to ask at the worksite, and it may be followed up back at school with opportunity to reflect and share learnings.

Many schools arrange workplace visits for students (as described in Chapter III), and teachers go along as chaperones. Visits set up specifically for school staff are less common. When a group of employers, a high school principal, and the University of North Carolina School of

Education formed the **Triangle Workforce Information Group (TWIG)***, their first project was to introduce high school teachers to high-tech workplaces. Their hope was that the teachers' new awareness would percolate through the school — that they would try out new activities in the classroom and would have practical answers when students asked, "Why do we have to study geometry?"

That in fact happened at Orange High School, in Orange County, NC, where all teachers participated in at least one half-day workplace visit during TWIG's first year. Keys to the program's success included: leadership from an enthusiastic principal, saturating the school with workplace awareness by having all teachers participate, and building in time for personal reflection on the experience. Teachers were expected to submit written comments on what they saw and on the implications for teaching and learning at the high school. (See sidebar.)

Triangle Workforce Information Group

Coordinator: University school of education
Partners: Employers, high schools

The Triangle Workforce Information Group (TWIG) is an alliance among employers in North Carolina's Research Triangle Park area, local high schools, and the University of North Carolina School of Education. TWIG was initiated by business and education leaders, including the vice president of a high-tech company and a former corporate vice president now on the faculty at the School of Education. Several business partners were motivated to joined TWIG because of their difficulty in hiring qualified entry-level workers. They wanted to introduce high school teachers and administrators to the demands of the high-technology, high-performance workplace in hopes that teachers would convey that knowledge to students and better prepare them for entry-level jobs.

TWIG arranges for groups of high school teachers and staff to visit leading employers, including IBM, Northern Telecom, Triangle Labs (a small high-tech firm), and area hospitals. During the first year (1993-94), all teachers at the semi-rural Orange High School made at least one half-day visit to a participating workplace. After a year, the project expanded from one high school to two and drew in additional employers. The simple experience of teachers visiting workplaces has led to significant changes in attitudes and instruction at their school.

These visits are more than simply plant tours to view technology. Teachers talk with entry-level employees about their responsibilities, what they have learned on the job, and how their work relates to what they learned in high school. They talk with first-line supervisors about how work is organized — for instance the extent to which the workplace is team-centered, expectations regarding individual responsibility, and opportunities for continuous learning on the job. And they talk with personnel directors about what they look for in entry-level employees and what it takes to move up the career ladder.

Teachers return from these visits with a new understanding of the workplace, and many (with strong support from their principal) have changed the way they teach. Some teachers have found ways to inject SCANS skills such as teamwork and problem-solving into classroom activities. Some have devised interdisciplinary projects after realizing, for instance, how a successful lab technician needs to combine chemistry, math, and writing skills. In addition, many teachers have returned to school eager for more contact with employers. TWIG has responded by organizing summer internships for several teachers at member firms.

TWIG is administered by a committee that meets semimonthly, with meeting places rotating among the members — one meeting is held at a high school, the next at a member firm. It receives staff support from graduate students in the School of Education.

One employer, Northern Telecom, supports the program in a unique way: It gives release time for employees to volunteer as substitute teachers when high school teachers go out on workplace visits. The Orange County School District trains these volunteers in accordance with state law. This has been extremely helpful in freeing up teachers for half-day visits to business and industry. In addition, the experience of substitute teaching has been valuable for Northern Telecom workers — they come away with an understanding of local high schools and a new appreciation for the work teachers do. Finally, the arrangement has been beneficial to students by providing interactions with adults who work for a leading high-tech employer.

* Contact information for TWIG and all programs in bold type is included in the Appendix.

Summer Internships

If a half-day visit to a workplace can change the way teachers teach, imagine the impact of getting to know a business or industry more intensely by working there for a week or longer. School districts that offer internship programs are enthusiastic about the impact on teachers and the school. Typically, teachers share their experiences with students and other faculty by developing applied learning activities for the classroom.[1]

Kentuckiana Education and Workforce Institute

Coordinator: Chamber of Commerce
Partners: Multiple school districts, employers

The Kentuckiana Education and Workforce Institute, no longer in operation, was an award-winning business-education partnership based at the Louisville Chamber of Commerce. Its partners included representatives from local schools, community-based organizations, government, and local businesses. The mission of the Institute was to promote the development and delivery of an educated, quality workforce able to compete in the global economy. The Institute promoted this mission through surveying businesses about their workforce needs and disseminating this information to local schools and training institutes. It also conducted programs such as the Education/Industry Exchange, described below, to promote communication and shared learning between businesses and teachers.

The Louisville Education/Industry Exchange

During the summers of 1992, 1993, and 1994, the Institute invited employers to sponsor teachers for month-long internships at the rate of $1,000 for 20 days of work. After signing on employers, the Institute prepared a listing of "job descriptions" and invited teachers to apply for the internships. Employers interviewed and selected interns from among the applicants. A total of about 20 internships were funded each summer.

Both the business sponsors and the teacher interns had high praise for the program. Teachers say the experience inspired them to improve classroom instruction by focusing more on writing skills, active listening, time management, teamwork, appropriate manners and dress, and computer skills — all skills that are essential for successful employment. Businesses described the teachers as "excellent part-time, temporary professionals who start quickly and do high-quality work."

continued next page

Setting up internships is more difficult than arranging workplace visits for teachers. Because internships usually occur during the summer, a source of funds must be found to pay a stipend for several days of work. In some cases the stipend is provided by participating employers; in other cases the school provides it through a school-to-work grant or other source. In addition, an administrative entity must develop internship positions, recruit teachers, and match them with employers. This management and coordination role is often filled by a business-education partnership or tech prep consortium.

From 1992-94, teachers in Louisville, Kentucky, had the opportunity to participate in an internship program coordinated by a business-education partnership — the **Kentuckiana Education and Workforce Institute's** Education/Industry Exchange. This program was financed by participating employers, who paid teachers $50 a day for a 20-day internship. After their month-long experience, interns invented classroom activities based on their experiences. Since 1995, this program has been restructured to offer week-long sessions with three days spent in the workplace. (See sidebar.)

At least one state — Illinois — encourages internships for teachers and counselors by providing stipends for summer internships of one to eight weeks in length. The **Northwest Suburban Career Cooperative**, a regional tech prep collaborative in Palatine, Illinois, has been coordinating an internship program for many years. Partners include three school districts, a college, and over 100 employers. The program allows teachers and counselors to design their own internship experiences in collaboration with employers. Prospective interns apply to the Career Cooperative, indicating what they want to learn, and the Cooperative puts them in touch with firms that might provide relevant

[1] Applied learning, which recognizes that many students learn best through practical experience, brings hands-on activities such as computerized modeling, mock manufacturing or design, or actual on-the-job experiences. Students often develop more interest and enthusiasm for school when they see concrete results of their work. See page 23 for more on applied learning.

Kentuckiana, continued.

To maximize the impact of the program, interns were asked to develop classroom activities based on their experience for dissemination throughout the school district. For instance, a teacher who worked at the Metropolitan Sewer District developed classroom projects that used math, biology, and physics skills to measure water quality. Since the program's inception, the faculty at one Louisville high school — the Pleasure Ridge Park High School Magnet Career Academy — have used school-level professional development funds to allow all faculty to participate in at least one internship experience.

Since 1995, the Kentucky Education and Workforce Institute's various functions have been assumed by the public schools and the Private Industry Council. The summer internships — now only three days in length and called Teacher/Business Exchanges — are coordinated through a consortium of six counties, including Louisville's Jefferson County. Most of the funding for this program comes from the state School-to-Work grant. Following their three days on the job, teachers spend two days developing curricula that incorporate what they learned. During the following school year, the teacher's business partner comes into the classroom to help present the new lessons. This program began in the summer of 1995 with over 100 teachers participating; an additional 240 participated in the summer of 1996.

experiences. The teachers then develop internship projects in conjunction with employers.

Their experiences have had impact in the classroom. For example, the chair of an applied technology department who interned at the Illinois Department of Transportation reorganized his classes to operate more like a professional drafting room. Students now check each other's work and collaborate to make corrections before submitting projects to the "job boss" (the teacher). A math teacher who interned at Allstate Insurance Company learned that actuarial science is a viable career for average math students after observing that the day-to-day work of actuaries involves the basics of ratios, percentages, fractions, and decimals. She also discovered that communication skills are essential to the work of actuaries, which affirmed her commitment to incorporating presentations and projects that use communication skills into her math classes.

Other Staff Development Activities

Some schools have found it valuable to include discussions with employers as part of staff development sessions for teachers and counselors. The **Norfolk Vocational Advisory Council**, a tech prep consortium associated with Tidewater Community College, arranges regular opportunities for teachers to hear employers' perspectives on education and training. In a two-day tech prep institute each summer, speakers from business and industry talk with high school and community college faculty about the changing workplace. At one staff development session, teachers heard the results of a local SCANS survey conducted by the Norfolk Chamber of Commerce. The core skills sought by local employers, they learned, are communication, math and science competency, teamwork, and problem-solving. The tech prep consortium also has brought in national experts on the changing workplace, such as Willard Daggett, for staff development events.

School & Main, a nonprofit organization that manages school change programs, has developed a seminar to promote dialogue between employers and educators. Called "Why Educate Differently?," the seminar helps educators and employers plan ways to work together to raise student achievement and better prepare students for the challenges of the workplace. These seminars can lay the groundwork for school/business alliances and develop action steps for building a school-to-career system.

In Kingston, Massachusetts, south of Boston, School & Main used "Why Educate Differently?" to help faculty at Silverlake Regional High School implement the statewide Goals 2000 program. A school leadership team met with local employers to identify potential business partners for the school, discuss curriculum issues, and develop a SCANS-based career guidance system. The school has used its new

contacts in the community to develop service learning, mentoring programs, and career planning partnerships. Elsewhere in Massachusetts, the "Why Educate Differently?" format helped a tech prep consortium develop a holistic approach to career education. Business professionals now act as mentors for school guidance counselors, who in turn help teachers incorporate career education into classroom activities.

Gathering Data on the Labor Market

The national SCANS study was a powerful force in raising educators' and policymakers' awareness of the changing demands of the workplace. In some communities, Chambers of Commerce or joint business-education partnerships have conducted local SCANS studies as a stimulus for school reform. Teachers, counselors, and school administrators who recognize the importance of the SCANS skills often find ways to incorporate those skills into the classroom.

When the school district and business leaders formed Fort Worth's **Project C³** (Community, Corporations, Classrooms), their first major project was a SCANS-type study of the local economy. Project C³ was founded with a threefold commitment to: (1) defining success in the workplace, (2) establishing performance standards in the schools, and (3) linking classroom instruction to real-world applications. The community undertook a massive self-study by 3,500 employees in 300 companies, who analyzed their jobs to determine the levels of proficiency required in reading, math, writing, computer literacy, and other skills. This study became the impetus for change in the schools. The results guided the school in developing instructional modules to teach the essential workplace competencies identified by the study.

The process of doing the study was as important as its findings. The thousands of working adults who participated in the study became attuned to the new efforts in the schools. Many adults volunteered to help teachers design applied learning activities. The whole C³ initiative has led to fundamental changes in what citizens expect from the schools as well as the schools' understanding of workplace demands. (See page 35 for a more complete description of Project C³.)

A national initiative to collect SCANS-type data at the local level is the Work Keys program, developed by ACT (formerly known as the American College Testing Service). Work Keys provides an instrument that companies can use to assess the generic competencies required for different jobs. A matching instrument measures students' (or employees') strengths and weaknesses in corresponding areas of competency.

One community that has used Work Keys as a vehicle for school change is Omaha, whose business-education partnership is called **Omaha 2000**. Volunteers working with ACT and the Chamber of Commerce profiled 45 job clusters according to the competencies they require. At the same time, the schools used Work Keys to assess high school students in skills such as reading for information and teamwork. The results have given students an impetus to sharpen their skills in certain areas and have led to changes in teaching and counseling. (See sidebar.)

Omaha 2000/Work Keys

Omaha, Nebraska has won two National Alliance of Business Awards for Excellence in Education, and also received one of the first designations as an America 2000 city. Its community-business partnership for change, Omaha 2000, is run by a 53-member steering committee and staffed by the Chamber of Commerce. Omaha 2000 began in 1991, adopting the original six national education goals of America 2000 as a framework for local efforts. The group surveyed schools to measure performance as well as community involvement. Businesses used a "report card" to grade their support of the schools, and community forums and surveys were held to develop specific recommendations for school change.

continued next page

BEST COPY AVAILABLE

Omaha Work Keys

Coordinator: Chamber of Commerce
Partners: Employers, school district, ACT

One of Omaha 2000's first initiatives was Omaha Work Keys, an assessment of workplace competencies required in the local economy combined with an assessment of high school students and how their basic skills measure up to workplace demands. The ACT Work Keys system was used to profile 45 of the most common jobs in the region and assess over 7500 students. Six volunteers were trained to conduct the study of jobs; the schools administered the assessment of students.

Data from Omaha Work Keys are used in several ways by individual students and by the schools. Students receive their individual test scores on skills such as reading for information, applied technology, teamwork, and applied math. They meet with teachers and/or counselors to discuss ways to improve their scores. They also compare their scores to the job profiles to see how well prepared (or well-matched) they are for various entry-level jobs. (ACT has conducted Work Keys studies in other cities and provides the results through a national database, so data on workplace competencies is available for more occupations in addition to the 45 profiled in Omaha.)

The schools have built staff development sessions around the Work Keys results, and have used the data to identify learning deficits that need to be remedied. For example, one high school set the goal of each student receiving a score of at least 3 (on a scale of 1 to 5) in listening skills. Each teacher had to develop a plan to incorporate listening skills into classroom instruction.

Such efforts need not be limited to large metropolitan areas. In **Cabarrus County**, North Carolina (population under 100,000), the Concord-Cabarrus Chamber of Commerce conducted a study on workforce preparedness in conjunction with local employers and schools. As one piece of the survey, employers were asked to rate the schools. They gave a "C" grade and stressed the need to teach better communications skills. Findings were discussed widely in the community and resulted in the adoption of the SCANS goals as the basis for the school district's vocational education program.

The study, conducted in 1992, was a springboard for broader school reform. The county developed a tech prep program that brought together academic and vocational teachers for staff development and arranged summer internships in industry for teachers. Employers, teachers, college faculty, and community representatives worked together to develop articulation agreements for the tech prep program and designed an assessment system to ensure accountability and continuous improvement.

Cabarrus County's experience is not unusual. Often, raising teachers', counselors', and administrators' awareness of workforce issues leads to changes in teaching styles and curricula that affect the entire school culture. Involvement with local employers can energize a school's faculty and drive the reform process. Understanding the workplace, whether through communication with employers or actual worksite experiences, helps teachers give students a better education.

III. Workplace Experiences for Students

"We are not talking about working and then going back to school. It is the integration between the two that is critical. It is the appreciation and understanding that while on the job, you can learn math and other subjects as well as while sitting in the classroom."

Hilary Pennington, quoted in *Building a System to Connect School and Employment*, American Youth Policy Forum (1994)

Positive interactions with working adults — through job shadowing, internships, mentor relationships, and visitors in the classroom — help young people see the connection between school and work. When these interactions take place in the workplace, they have an added advantage in introducing students to different occupations and work environments to help them begin making tentative career decisions. The school-to-work movement recognizes the importance of experiences in the workplace and names "work-based learning" as one of its three elements (the others being school-based learning and "connecting activities."[4])

Different types of work-based learning are appropriate for different ages. For middle school and high school students, there are many ways to structure visits to workplaces as learning experiences. Service learning also can provide an engaging introduction to the world of work. For high school students who are ready to choose an occupation, youth apprenticeship provides a smooth transition from school to career.

Workplace Visits

Job shadowing or internship experiences can help give young people a meaningful introduction to particular career areas that they might pursue — or convince them that a particular occupation is not appealing after all. These programs can be tailored to middle school or high school students. They can be designed around short visits or longer internships of a week or more. In some programs, students interview adults on the job; in others, they work alongside adults in the workplace for a day or more. Regardless of how the program is structured, it is important to give students an opportunity to reflect on the experience.

[4] Connecting activities bridge school-based and work-based learning, and may include matching students with employers' work-based learning opportunities; serving as a liaison among employers, schools, parents, and students; or collecting and analyzing information about post-program experiences for students who participate in the school-to-work program.

Louisville's **Western Middle School**, an Alliance for Achievement site, piloted a job-shadowing program that has now spread to all 23 middle schools in Jefferson County. The pilot program began as part of Western's participation in the Edna McConnell Clark Foundation's project for disadvantaged youth. The Clark Foundation funded a staff person who scheduled job shadowing visits for Western and two nearby middle schools. Each eighth grader at Western participates in job shadowing for at least one day during the year. The students visit workplaces in groups of five to eight, accompanied by a teacher. At the workplace, they work alongside adults; upon returning to school, they write about the experience in their portfolios. Students are enthusiastic about their experiences, and Western Middle School staff report that after participating in job shadowing students show a more positive attitude about the future, both in their portfolios and in conversation, and they visualize a wide range of jobs that they believe are within their reach.

Another Alliance for Achievement school, **Stone County High School** in Wiggins, Mississippi, offers workplace visits for all ninth and tenth graders as part of the English curriculum. The visits are structured to provide practice in teamwork as well as writing and oral presentation skills. Students are grouped in teams of four to five, each with a team leader. When they arrive at the workplace, team members separate to observe and interview workers doing different jobs. Returning to school, the team members discuss their observations and plan a presentation.

These visits were set up initially by the tech prep coordinator at Mississippi Gulf Coast Community College (and a member of the Alliance for Achievement team), who made personal visits to local businesses to gain their support. He coached the businesses on emphasizing to students the importance of learning basic skills. Once a relationship was established with several employers, high school teachers began arranging the visits on their own.

At best, workplace visits are integrated into the curriculum. A good example is the nationally-recognized program at **Albert G. Prodell Middle School** on Long Island, New York, which has been introducing students to careers for many years. Seventh graders divide into groups to study occupational clusters. They research occupations in their cluster and then prepare questionnaires to guide them in interviewing workers whom they will visit. Students take a series of four to six weekly field trips to related workplaces. For instance, a group exploring medicine might visit several departments of a hospital, a dental clinic, and a veterinarian's office. A group exploring arts and communication careers might visit a newspaper, a radio station, a television station, and a theater. At each worksite, students interview employees. After each visit, the students reflect and share their observations through oral reports and other means. They also write thank-you notes.

The school believes the program has multiple benefits. It helps students form preliminary ideas about the kinds of careers they may wish to pursue. At the same time, they learn how to research careers that they may want to explore in the future. And they practice skills such as devising interview questions, reporting on their observations through oral and written reports, and writing thank-you letters.

The program is orchestrated by Joanne Urgese, the school's Community Service Coordinator. She teaches a sixth-grade course called "Cultural Awareness" to prepare students for worksite visits and service learning. Working with teacher assistants, she also sets up the worksite visits and accompanies students to the worksite and coordinates service learning opportunities (see p.16).

A more intensive internship program for middle schoolers is Fort Worth's Vital Link[5] program, which arranges weeklong internship experiences during the summer. After starting in 1991 with 40 seventh graders working in four hospitals,

[5] Vital Link is one component of Fort Worth's C³ business-education partnership, described further on page 11.

by 1996 Vital Link had placed 6,000 students at 200 companies. Worksites span a wide range of private and public employers including hospitals and health clinics, hotels, banks, retail and wholesale businesses, manufacturing firms, high-tech labs, law firms, city and county government, and television stations.

SCHOOL-WORK PLUS

Coordinator: High school economics or social studies teacher
Partners: Employers, middle school, local TV station

Originally developed as the Indiana-PLUS program, School-Work PLUS was implemented in several states in 1992 and 1993. It was co-sponsored by PLUS (Project Learning U.S., a collaborative effort of the ABC and PBS television networks), the U.S. Department of Labor's SCANS Commission, and READ America (a nonprofit literacy organization). School-Work PLUS is a unique model that touches high school students, middle school students, teachers, employers, and (through the participation of a local TV station) the entire community.

The semester-long program is based in a 12th-grade economics or social studies class. It has the following elements:

- **Orientation**
  Students are introduced to school-to-work issues, including the findings of the SCANS study.
- **Research**
  Students plan and conduct field research using a modified version of the SCANS questionnaire to interview adults about their jobs. A business advisory council helps pave the way for these interviews, but students choose workplaces to visit and set up the interviews themselves. Each student conducts four to five interviews.
- **Middle school survey**
  The high school students survey middle schoolers to measure their knowledge about workplace skills and career interests. This helps the high school students plan an appropriate presentation for middle schoolers and also serves as baseline data in evaluating what middle schoolers learn from the presentation at the end of the semester.
- **Creative development**
  Class members share their learnings with each other and then plan a presentation to middle school students. Presentations can take a variety of creative forms, including handbooks, videos, skits, and quiz shows.
- **Communication**
  The semester culminates with a presentation at one or more middle schools, where high school students share what they have learned about the workplace.
- **Role of the TV station**
  In School-Work PLUS, the local ABC or PBS affiliate helped set up a business advisory board. It provided technical assistance to students in producing videotapes to share with the middle schools.

continued next page

Participants in Vital Link spend a week at a workplace, as part of a group. A teacher accompanies each group to help supervise and lead group activities, including daily writing in a journal. Each student is assigned to a mentor. Students participate in real work tasks such as: tracking shipments across the United States at the Burlington Northern Railroad Billing Center; working on the sales floor and helping select items for the fall season at JC Penney and Neiman Marcus; helping research and write briefs at law firms.

Vital Link has had a positive impact on students, teachers, and the business community. Students gain an appreciation for the rules that adults must live by, and they learn that work can be enjoyable. They also learn the importance of communication, teamwork, and problem-solving in the workplace. Teachers gain an understanding of the links between the classroom and the workplace. Businesses that host Vital Link report an increase in employee morale, as mentors discover they can be teachers and see their jobs through the fresh eyes of interns. An additional bonus for the school district has been heightened support for public education. The presence of so many students and teachers at the workplace has raised public awareness that education is no longer business as usual in Fort Worth.

An even more intensive model is **School-Work PLUS**, a semester-long high school course that grew out of the SCANS study described in Chapter 1. In School-Work PLUS, students work in teams to interview employers and develop a videotaped presentation of their learnings, which they share with middle school students. School-Work PLUS exposes students to several workplaces and the generic skills they require. More important, the course itself teaches several important SCANS skills that are often overlooked in traditional classes, such as teamwork, creativity, time management, and seeing a project through from its conception to a "public" presentation. Many students and teachers have described School-Work PLUS as the best school experience they have ever had. (See sidebar.)

School-Work PLUS, continued.

Most importantly, the local TV station followed the students' progress throughout the semester and reported on the project in the nightly news; some stations also produced hour-long specials on the changing workplace. This news coverage not only gave the project a high profile in the community — thus fueling the students' enthusiasm — but also raised community-wide awareness about the high-performance workplace and the need for SCANS skills.

School-Work PLUS was received enthusiastically by participating students and teachers. Many described it as the best school experience they have ever had; one teacher said, "It changed my life." The model is effective because it practices what it preaches — it requires students to exercise teamwork, time management, responsibility, communication skills, creativity, and other skills highlighted by SCANS. The program places the teacher in the role of coach rather than instructor. The concept of high school students sharing their learnings with middle school students proved to have a big impact on middle schoolers.

Although national funding is no longer available for School-Work PLUS, curriculum and related materials are available for schools that want to implement the program or selected aspects of it.

Service Learning

A variation on the theme of job shadowing and internships is service learning — combining meaningful work in community service projects with reflection and learning. Through service learning, students gain an introduction to careers while they practice responsibility, teamwork, and relating to others. Many educators believe service learning is particularly valuable in nurturing early adolescents' sense of caring and self-esteem.

Like workplace visits, service learning is most effective when integrated into the curriculum. It can be initiated by an individual school, either as a separate class or a cross-disciplinary project, organized by teams of teachers.

Albert G. Prodell Middle School, whose job-shadowing program is described on page 14, has included service learning as part of its curriculum for nearly 25 years. All students take a six- to ten-week unit of study which includes one hour per week of work in a community agency. Middle schoolers work with young children in day care and Head Start centers; they lead learning activities in elementary school classrooms; they work with handicapped children at hospitals and special education programs, and with the elderly in nursing homes. In the classroom, they learn caring skills as well as gaining an understanding of the age group they are working with.

Another middle school that integrates service learning into the curriculum is **Martin Luther King Jr. Middle School** in San Francisco. All seventh graders participate in service learning projects planned by teams of teachers. Worksites are quite diverse, including human service agencies such as a food bank and a homeless shelter, nonprofit organizations like the Clean Air Coalition, and local parks. Students work in groups to plan their project and go to the worksite twice a month. At school, they work on related assignments which may include writing about their experiences or conducting a related math or science project.

Service learning can provide rich and varied experience for students. An illustration is provided by one of the projects at Martin Luther

King Jr. Middle School — the construction of an amphitheater at Golden Gate Seashore National Park. The students calculated how much of each building material they needed and measured slopes and angles. They did the physical labor of moving dirt and mixing and spreading concrete. When the project was completed, the students enjoyed the fruits of their work by attending a program at the amphitheater.

James Taylor, principal of Martin Luther King Jr. Middle School, believes the sense of satisfaction and pride that comes from completing a community service project is extremely valuable for his students. The projects also teach them work-related skills such as planning together as a team and meeting deadlines. Service learning gives them the experience of applying math and other academic skills to real-world problems (as discussed below under "Applied Learning"). And it gives them an appreciation and respect for all kinds of work that people do, from manual labor to design and management.

There is a growing service-learning movement in the United States, for all ages from middle school through college students. A good source of information on service learning is the National Society for Experiential Education in Raleigh, North Carolina.

Youth Apprenticeship

Youth apprenticeship represents one of the newest, and one of the oldest, ways for students to learn about the world of work. Before the advent of technical colleges, apprenticeships were a common way for young people to learn job skills. Apprenticeships in the United States became rare as industrialization simplified most jobs and mobility became more pervasive, and for many years only a few thousand apprentices, mostly adults, were registered with the Department of Labor. But in the past few years, apprenticeship opportunities have begun to be offered as part of the high school curriculum in schools across the country.

Apprenticeship programs, unlike other programs profiled here, usually serve only a small number of students. They are expensive for companies to administer — students are paid a salary, must be closely supervised, and often are provided with training classes at a local technical institute — and thus companies tend to be highly selective about the students who participate in the program. But for those who are able to participate, youth apprenticeship is an invaluable experience. Apprentices thoroughly learn a trade, and at the end of the program they receive a nationally recognized credential that verifies their knowledge. These students are in an excellent position to begin their career and often continue to work for the training company as a permanent employee.

While it is easy to see youth apprenticeship as a contract solely between the student and the training company, the school must be involved as well. Schools usually recruit students for the apprenticeship positions and they often evaluate the programs. Most schools need to make curriculum changes in order to prepare students for the apprenticeship, support them once they begin the program, and provide flexible course scheduling so that students can spend part of the day at the worksite. Many schools actually administer youth apprenticeship programs, which means that they recruit training companies, coordinate student selection, and handle the administrative details.

An example of school-run apprenticeship is a new program at the Alliance for Achievement's **St. John's High School**, started by a team of school personnel and employers in 1995-96. This school is located on Johns Island, which is part of the Charleston, South Carolina, school district but quite rural and isolated from the city. Many Johns Island adults work in the resorts on nearby Kiawah Island, typically in

Metalworking Connection

Coordinator: Network of small manufacturing firms
Partners: High schools, universities, state department of education

In rural Arkansas, a network of small metal fabricators known as the Metalworking Connection has designed a youth apprenticeship program which integrates intensive work-based learning with secondary education. Metalworking Connection members developed the program to train a new generation of tool and die makers and machinists.

Prospective apprentices apply from many regional high schools, and the employers select which students will participate. During their junior and senior years, the students attend school in the morning and receive paid on-the-job training in the afternoon. They receive 144 hours of classroom-based technical training during the first year of the apprenticeship. The Metalworking Connection also offers tutoring in any subject in which students need help.

After high school graduation, students may continue their education in college while remaining in the apprenticeship program. After four years of training (junior and senior year plus two years post-secondary), they are certified by the U.S. Department of Labor as machinists. Of the first cohort of apprentices who began in 1992, all expected to stay on as permanent employees with their training company when their apprenticeship ended in 1996.

The program is very popular with students, and companies receive far more applications than they can accept. In 1995-96, 120 students were performing apprenticeships with over 50 companies, and the program expected to enroll 70 more apprentices for 1996-97. Students are chosen on the basis of school attendance, math proficiency, recommendations from teachers and former employers, and parental consent.

The Arkansas State Department of Education provides part of the cost of training, with additional support from the Economic Development Center of Henderson State University and the Arkansas Institute for Economic Advancement of the University of Arkansas at Little Rock. At first the program was funded solely by the state, but by 1996 Metalworking Connection partners had assumed 75% of the cost of the program; their goal is to make the program self-supporting. Trainer companies receive a state income tax incentive of 10% of the apprentices' wages, up to a maximum of $2,000 per apprentice per year.

low-wage, low-skill jobs. The apprenticeship program aims to propel St. John's graduates into Kiawah jobs with more opportunity for advancement. Four occupations have been targeted — food and beverage services, marketing, accounting, and horticulture. Kiawah employees travel to the high school three times a week to conduct classes and job training in these four areas, and students work after school or on weekends and through the summer at the resort. These programs will be registered as certified apprenticeships with the U.S. Department of Labor, and students can earn certificates or associate degrees in all four fields at Trident Technical College in Charleston.

Some youth apprenticeship programs are run by employers. Two examples of company-run programs that are receiving national attention are those of the **Metalworking Connection** and the **Siemens Corporation**. The Metalworking Connection's program is unique because it is run not by a single, large company, but by a group of small firms who have joined together to form a flexible manufacturing network. It draws students from many regional high schools and offers an option of a combined high school/technical college program for students who want to obtain a technical college degree as well as certification from the U.S. Department of Labor. (See sidebar.)

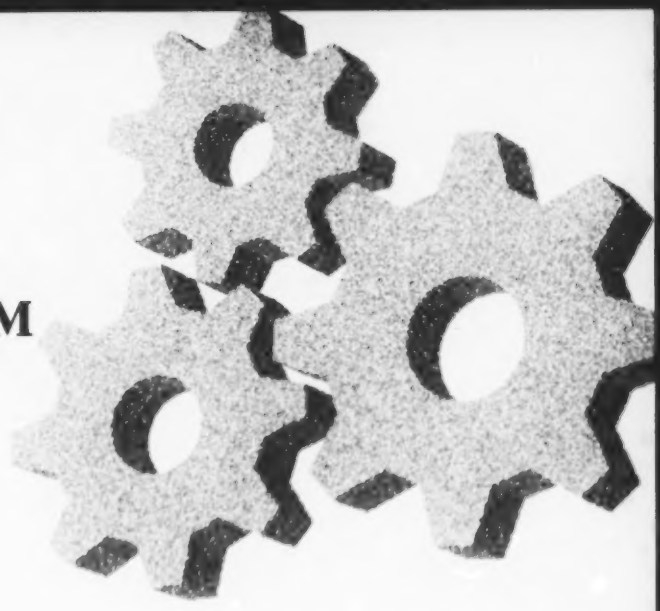
The Siemens Corporation is a German electrical/electronics manufacturing company with plants located all around the world. The German educational system is noted for its strong emphasis on work-based learning, and Siemens has brought German-style apprenticeship to American towns where its plants are located. The Siemens Corporation spends around $300 million each year — nearly a million dollars per day — training 13,500 apprentices in 20 different countries. The company benefits from the value added to its production by well-trained employees, not only in production but in management as well. In fact, nearly 40% of the company's upper management — including the current President and CEO — began their careers as apprentices.

Siemens has five fully operational apprenticeship programs in the United States, in Santa Clara, California, Lake Mary, Florida, Franklin, Kentucky, Raleigh, North Carolina, and Alpharetta, Georgia. Another 20 programs are in various stages of development. All five pilot programs involve high school students as apprentices, some include adults as well. The youth apprenticeship programs are small, ranging from 5 to 32 high school students. They usually involve two years of paid work experience and technical training during high school plus two years of technical college. Training centers are

located in high schools, technical colleges, or at the Siemens plant. Siemens works with local high schools to develop a curriculum for apprentices that connects with Siemens' on-the-job training and with the college's course of study; students also have the option of getting a four-year college degree.

As an alternative to company-run programs and school-run programs, some youth apprenticeship programs are administered by business-education partnerships. In Louisville, the **Kentuckiana Education and Workforce Institute** (a partnership managed by the Chamber of Commerce) established apprenticeship programs at five "magnet career academy" high schools. Each school focuses on a cluster of occupations and has partnerships with related industries and colleges. Students learn about career options through presentations, mentoring, job shadowing, and other interactive programs and then spend part of their junior and senior years gaining work experience with business partners. These "apprenticeships" are not the long, intensive, Department of Labor-certified programs like the ones at Siemens or the Metalworking Connection, but students earn credit in technical programs at partnering postsecondary institutions. (For more on the Kentuckiana Education and Workforce Institute, see page 9)

IV. Experiences in the Classroom



"To help our kids become the employees we need, we all have to go back to school."

BellSouth advertisement

The programs described in Chapters II and III take students, teachers, and counselors to the workplace for experiential learning. This chapter describes ways to bring real-world experiences into the classroom through adult visitors, applied learning, and entrepreneurship education.

Adult Visitors in the Classroom

Many schools invite adults from the community to participate in career days or other events which give students a taste of many careers. But if these programs occur only sporadically, or with little explicit connection to students' everyday learning experiences, they usually have little long-term benefit. Programs are more effective when they bring guests to the classroom to talk about their careers and how they made life choices, or have guests lead classroom projects related to activities in the workplace.

As part of its participation in the Alliance for Achievement, **Haut Gap Middle School** (part of the Charleston, South Carolina, school district) developed an annual career day where eighth graders interact with adults working in a variety of occupations. This event is the culmination of a nine-week interdisciplinary unit on careers, where students learn to apply knowledge from their academic classes to "real-world" problems. The daylong event features adults from a variety of occupations, recruited by teachers, who speak to small groups of students. Parents also are invited to come and share their career experiences. Students dress "professionally" for the day, wearing their best clothes. Each student chooses several occupations to learn about. Adults describe what they do, why they enjoy their work, and the path that took them to their present job. Occupations represented at the 1996 Career Day included law enforcement, nursing, news reporting, law, public relations, and management.

Because of their close ties with employers, community colleges can be a resource to put schools in touch with speakers from local business. The **Partnership for Academic and Career Education (PACE)** is a Tech Prep consortium based at Tri-County Technical College in Anderson, South Carolina. It publishes a biennial Guide to Area Business Speakers as a resource for K-12 teachers who want to bring

speakers to their classrooms. The guide is compiled by PACE staff who send area professionals a survey asking if they are willing to visit schools and discuss their careers. In addition to the speaker's name, occupation, and address, the guide includes information on preferred topics and activities for the visit. The survey sheets are arranged by type of occupation and indexed by speaker's name, company name, and speaker's high school alma mater for easy reference.

Thomas Nelson Community College in Newport News, Virginia, has gone a step further by organizing a program to bring speakers from industry to hundreds of middle school classes. **ATOMS** (Adventures in Technology = Options in Math and Science) is designed to motivate seventh and eighth graders in math and science and to introduce them to careers in technology. Teams of workers from industry visit classrooms, bringing hands-on projects for students to work on. Students later visit "their" team at the workplace. (See sidebar.)

Thomas Nelson Community College and ATOMS

Starting in the 1980s, Thomas Nelson Community College in Newport News, Virginia, spearheaded a regional partnership to involve businesses with education. The college president called together leading employers in the region to ask about their workforce needs. They quickly said they needed smarter front-line workers, and they told educators to make sure students develop higher-order thinking skills. The college and the employers formed a partnership to help regional schools build a pipeline to scientific and technical careers. The partnership first produced a white paper to coalesce public support around the recommended changes in the schools. It then began sponsoring activities in the high schools. Soon partnership members realized they had to reach younger students, and they initiated hands-on learning and career education programs for grades five through twelve.

The partnership now sponsors a number of programs to expose young people to the workplace. One of these programs is ATOMS.

ATOMS (Adventures in Technology = Options in Math and Science)

***Coordinator:** Community college*
***Partners:** Employers, middle schools*

ATOMS is designed to convince seventh and eighth graders that they need math and science, and it has proven to be highly motivating. The program selects a group of seventh graders for extra enrichment in math and science, seeking out students who are "in the middle" academically — those with test scores between the 30th and 75th percentile in math/science, who are taking math but are not in a "gifted" class. An ATOMS staff member, based at the community college, conducts a career awareness session with the class, and later they are visited by a team from one of six industry partners.

The industry team speakers bring hands-on projects for students to work on, such as taking apart a copying machine and putting it back together. The students later visit "their" team at the workplace. Students rate each team of presenters, and if they find the presentation boring, that team is not invited back. Local industry is so enthusiastic about this program that employees compete for the opportunity to participate on teams.

In eighth grade, students must enroll in pre-algebra or a higher-level math course in order to continue with the program. Eighth graders visit a high-technology facility to meet with the men and women who work there, and then visit Thomas Nelson Community College to learn about postsecondary programs that prepare people to work in these industries. Students observe classrooms and labs, and Thomas Nelson faculty members talk with them about the importance of doing well in high school and the courses they need to take.

Since ATOMS began in 1990, 18,300 students have participated. Because of the requirement that eighth grade ATOMS students take pre-algebra or a higher-level course, their enrollment rates in higher-level math and science courses are much higher than those of their peers. ATOMS students also do better than their peers on the Iowa Test of Basic Skills.

As part of the Alliance for Achievement project in Wilmington, North Carolina, **Career Connections** has developed partnerships between schools and businesses to raise teachers' and students' awareness about careers in the local economy. Business partners — including a bank, a power company, a phone company, and a heating and air conditioning company — met with teachers to plan activities at each participating school, including hands-on projects in the classroom led by company employees. Middle school students learned about bank management; in math class they learned how to balance a checkbook; and in language arts class they wrote essays about banking. A technology class built a scale model of a bank. Another

middle school worked with the heating and air conditioning company to design an efficient cooling system for their school. High school students worked with electric company employees to learn how to generate electricity, keep financial accounts, and properly dispose of the waste produced by generation. (For more on Career Connections, see page 33.)

Applied Learning Activities

"Many times," writes Roger Perry in *The Community College Times*, "it takes a 'eureka experience' to focus one's attention on the obvious."[6] His "eureka experience" was the realization that since most people learn by doing, schools should teach applied skills first and then teach theory once students are comfortable with the concrete.

Applied learning helps students understand the connections between in-school learning and real-world knowledge. It brings into the classroom the kinds of activities a student might do in a community service project or job internship and can be highly engaging and motivating.

When Fort Worth formed its **Project C**[3] (Community, Corporations, Classrooms) in 1989, one of its three initial goals was linking classroom instruction to real-world application. Applied learning has remained at the heart of Project C[3]. While applied learning has been embraced by tech programs nationwide, Fort Worth is injecting it into the schools at all levels from kindergarten through 12th grade. The school system includes one elementary school dedicated entirely to applied learning, as well as a heavy emphasis on applied learning at all schools in the district. Fort Worth's applied learning projects are developed collaboratively by teachers and employers to provide project-driven, problem solving and learning experiences for students.

The Fort Worth schools initiated applied learning in 1991-92, when 38 teachers volunteered to create instructional modules aimed at teaching the skills identified by Project C[3]'s survey of area employers and by the SCANS report (as discussed in Chapter II). By the beginning of 1997, over 400 teachers and 11,000 students had been involved in applied learning projects. Many ideas from applied learning come from teachers who complete summer internships in business and industry; other ideas are suggested by contacts in business and industry who are drawn into the schools through Project C[3].

Applied learning takes many forms in the Fort Worth schools. For example:

- In a high school biology class, students were assigned to grow something using hydroponics. One group of students decided to grow strawberries and use goldfish to provide nutrients. When mites appeared on the fruit, they had to organize a research effort to solve the problem.
- A fifth-grade class worked in teams to organize a district-wide Young Authors Conference for elementary students. Among other things, the project involved writing letters to students and teachers throughout the school district and producing a collection of essays by members of the class.
- A high school English class worked with the United States Army Corps of Engineers and Texas Parks and Wildlife Agency to research and produce a pamphlet for visitors to a local nature preserve.

[6] Roger Perry, "It's Time to Teach the Way People Learn," *The Community College Times*, September 24, 1996, p. 3.

Entrepreneurship Education

Many people, at some time in their lives, dream of being their own boss — of starting their own business. For young people growing up in rural communities with few job opportunities, starting a business may be the only way to earn a livelihood in their home town. Indeed, a renewed spirit of entrepreneurship may be the best hope for rural communities that are losing most of their young high school and college graduates to the cities.

The typical career awareness program helps young people learn about a variety of occupations, but becoming an "entrepreneur" is different from becoming a nurse or a lawyer. What advice should a guidance counselor give a student who aspires to own and operate a small business? How can schools help potential entrepreneurs explore their interests and develop their skills?

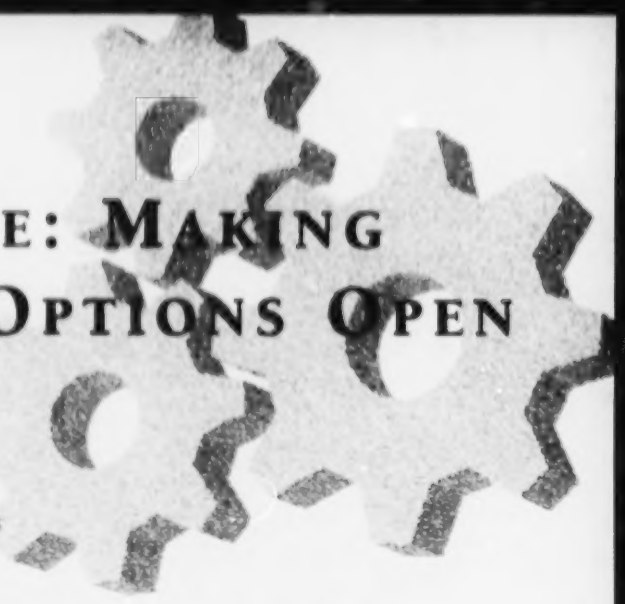
Over the past decade, educators have begun developing curricula to teach entrepreneurship skills at the high school and postsecondary level. One of the best is **REAL Enterprises** (Rural Entrepreneurship through Action Learning), used in rural high schools and community colleges nationwide. The REAL curriculum is strong on experiential education, giving students the opportunity to experience firsthand what it means to be an entrepreneur. REAL students analyze the local economy and then plan, set up, and operate their own small business. The program teaches students to conduct research, work effectively in groups, deliver convincing oral and written presentations, solve problems and make decisions — all skills that are important no matter what career the student ultimately chooses.

A Community Support Team at each REAL site recruits local business leaders and business assistance professionals to act as mentors and advisors for the students, furthering the young people's understanding of the small business world. Some sites have raised money for a revolving loan fund to help finance student-run businesses. At some schools REAL students start the individual businesses, while in other sites groups of students manage school-related businesses.

In Chattaroy, Washington — a small community with almost no businesses that could offer work experiences to young people — Riverside High School has served as an incubator for student-developed businesses that employ other students. One business has the maintenance contract for the high school while another sells recycled paper pellets that are used to heat district school buildings. Riverside has found that REAL motivates students to do better in their other classes as they discover the connection between mastering math, communication, and other academic skills and running a successful business. It also helps motivate students to go to college.

The REAL curriculum is usually taught by a business teacher at the high school, who attends a two-week summer institute and becomes familiar with the program and its experiential teaching methods. Many teachers have found teaching REAL to be a rejuvenating experience. Their role is more akin to a coach than a traditional high school teacher, and they often find they can apply some of REAL's innovative classroom techniques to their other classes as well.

V. Career Guidance: Making Choices, Keeping Options Open



Seldom is career and educational guidance integrated into the curriculum, starting in elementary or middle school, with teachers playing a primary role. And few schools successfully convey to students the link between academic achievement and their future prospects in the workplace.

Even when schools do the kinds of things described in the previous chapters — raising teacher awareness about the local economy, providing opportunities for students to visit workplaces, and offering relevant classroom experiences — guidance is often a weak link in the school-to-work transition. Without appropriate guidance from adults, career exploration may not lead to good career and academic planning. Guidance counselors can play a lead role, but they need substantial support and help from teachers, counselors, family members, and others in the community.

How do young people begin choosing a career path? A survey of Alliance for Achievement schools found the most prevalent source of career information was family and friends.[1] Fifty to 75% of students in both eighth and tenth grades listed parents as a significant source of help in post-high school planning. Siblings, other relatives, and friends were significant sources for about 20 to 30% of the students.

In inner-city neighborhoods or rural communities where family and friends work in a limited range of occupations, many youth suffer from low horizons while others aspire to unrealistically glamorous careers inspired by television and sports heroes. And too often, no one helps students make the connection between their career goals and high school coursework. Many students, for example, say they want to become physicians but fail to take the full complement of college prep science courses.

Fortunately, career guidance is beginning to gain a higher profile in schools, due in part to the work of the National Occupational Information Coordinating Center (NOICC) and the American School Counselors Association. The two organizations have promulgated the *National Career Development Guidelines*, a set of

High Hopes, Long Odds

***High Hopes, Long Odds* is a comprehensive study of young people's aspirations and achievement in Indiana, conducted for the Lilly Endowment in 1991 and 1993 by Gary Orfield and Faith G. Paul. The study identified a severe mismatch between students' high aspirations and weak academic preparation, and it made recommendations that get to the heart of career and educational guidance. *High Hopes* recommendations revolve around seven fundamental responsibilities of schools — things schools can and must do to**

continued next page

[1] This survey of eighth and tenth graders was conducted by MDC in 1994, before the Alliance schools had implemented career education activities.

High Hopes, continued.

promote opportunity for their students. They are:

1. Offer *academic programs that are relevant* to the economy and to the individual opportunity of students.
2. Give students *honest and fair advice* in choosing academic programs. Before recommending any academic program to students, guidance counselors should ask: Does the program keep future options open? Is it relevant to tomorrow's labor market? Has the program been fully explained to the student and his or her family?
3. Ensure that *gatekeeper courses are accessible* to all students. Gatekeeper courses are classes such as algebra, foreign languages, and rigorous English and science courses that are necessary to enter a competitive college.
4. Help students with *educational and career planning*. Every student should begin developing a plan in seventh or eighth grade and modify it as he/she progresses through high school. If schools have too few counselors to help every student develop a plan, other faculty, staff, or even well-trained volunteers should be enlisted to help with educational and career planning.
5. Give informed advice to *help students select postsecondary campuses*.
6. Inform students about *labor market trends*.
7. Free counselors from noncounseling tasks and give them better preparation so they can provide *adequate information and help* to students and their families.

competency-based guidelines for ages kindergarten through adult. They have published handbooks for every school level on how to develop a career awareness program that is integrated into the curriculum. Some states (such as Indiana, North Carolina, Wisconsin, and Oklahoma) and individual school districts have begun developing their own career education curricula.

It is beyond the scope of this report to review career guidance curricula or to recommend a comprehensive approach to guidance. However, the Alliance for Achievement advocates the following eight principles to help shape career guidance in middle schools and high schools. Examples from the Alliance and other schools illustrate ways to put these principles into practice.

National Career Development Guidelines

The *National Career Development Guidelines* identify three components of career guidance: self-knowledge, educational and occupational exploration, and decision-making and career planning skills.

Self-knowledge includes awareness of one's interests and abilities. Students can develop this awareness through counseling, testing, self-guided reflection exercises, and experiential approaches. According to a study by Public/Private Ventures, this is a significant gap in career guidance — only 18% of the career education programs in schools include activities related to self-knowledge.[1]

Educational and occupational exploration includes understanding the relationship between school achievement and career options, knowing how to locate and interpret career information, and developing job-seeking and employability skills. According to the Public/Private Ventures study, most school-based career education programs address this aspect of career guidance, but typically it involves little more than reading about careers in national sourcebooks such as the *Occupational Outlook Handbook*. It seldom includes experiential learning or information on opportunities in the local labor market.

Decision-making and career planning allows students to establish realistic career objectives based on an analysis of information about themselves and about career opportunities. Students are trained to make decisions rather than simply to receive information. These skills are taught indirectly, by asking students (for example) to describe occupations with which they are familiar and relate them to one's interests and abilities; to predict the likely outcomes of one's decisions; to identify requirements of secondary and postsecondary programs; and to identify alternatives in decisionmaking situations. Public/Private Ventures found that this aspect of career guidance is addressed in about half of school career education programs.

[1] Public/Private Ventures, *Finding One's Way: Career Guidelines for Disadvantaged Youth*, 1993.

Alliance for Achievement Principles for Career Guidance

1. Integrate career guidance into the curriculum.

Career guidance should be integrated into the curriculum as an ongoing, developmental activity, not an isolated event. This can be done by infusing guidance into existing structures such as advisor/advisee programs or academic classes.

When it joined the Alliance for Achievement, **Haut Gap Middle School** on Johns Island, South Carolina, made a commitment to infuse career awareness into its curriculum. The school began by training all staff on career opportunities in the local economy. Teachers then worked in teams to incorporate career activities into the curriculum for each grade level. Career awareness at Haut Gap begins in sixth grade, where students spend four weeks of their Home Arts classes on self-esteem and self-understanding. Seventh graders are introduced to career clusters and job skills, and in eighth grade students take a nine-week interdisciplinary unit on careers. During the nine weeks, all eighth-grade teachers plan activities related to careers which incorporate lessons students have learned in class.

At the end of the nine weeks, teachers invite adults from the community to school for a "Career Day." Adults representing a wide variety of occupations meet with groups of students to discuss their jobs and share personal stories about their career paths. (Haut Gap's Career Day is described further on p.21.)

2. Involve teachers, counselors, other school staff, and adults in the community.

If it is to reach all students and have an impact, responsibility for career guidance must be shared by adults within and outside the school.

Haut Gap Middle School provides a good example of a school that has tapped adults in the community — parents, friends of teachers, and others — to enrich career guidance for students (see the description of "Career Day," above).

The community college can be a resource in providing educational and career guidance to young people. For example, Trident Technical College's Educational Talent Search program sends a staff person to Haut Gap Middle School weekly to help low-income students begin thinking about college, to broaden their horizons and introduce them to careers.

A statewide initiative that draws on colleges to enrich career guidance at middle schools is **South Carolina's Higher Education Awareness Program (HEAP)**. Sponsored by the South Carolina Commission on Higher Education, HEAP relies on two-year and four-year colleges to reach out to eighth graders, encouraging them to stay in school and go to college. HEAP uses humorous handouts and videos to make the point that education pays — that people who go to college will earn more and have better job prospects than those who do not. (See sidebar.)

3. Teach about job opportunities in the local economy.

Career guidance should include information grounded in the opportunities in the local and regional economy as well as the national economy.

Many of the best ways to learn about the local economy involve the kinds of experiential approaches discussed in previous chapters — job shadowing, service learning, and interviewing workers about their jobs. Classroom projects also can introduce students to opportunities in the local economy. One example comes from **Martin Luther King Jr. Middle School** in San Francisco, which has developed classroom activities using data compiled by a citywide economic development organization. In their social studies and language arts classes, students learn about the growing sectors of the San Francisco economy, from arts and recreation to services, trade, communications, medical and high-tech

research, construction, and government. They select an occupation that appeals to them in each sector and research the skills it requires. The students then discuss how their middle school studies could be helpful in preparing for various careers.

North Carolina's middle schools offer a semester-long elective course called **"Exploring Career Decisions"** that covers self-awareness, workplace awareness, career exploration, and educational planning. It includes several activities in which students research the local labor market. For example:

- Search a local newspaper's classified ads to find jobs that require each of the following: less than a high school diploma; a high school diploma; a two-year, postsecondary degree; a bachelor's degree; and more than four years of college. What are the characteristics of these jobs? How much do they pay?
- Interview a parent about his/her job; interview someone working in a selected occupation about his/her job. (The curriculum suggests questions to ask.) Share learnings with the class.
- Investigate ten local businesses. Tell what product or service they provide and what kinds of jobs people do there. Use the Yellow Pages as a resource.

A good source of labor market information is provided by the annual tabloids on career opportunities published by State Occupational Information Coordinating Committees (SOICCs). These newspapers usually include information on projected growth of different occupations, average wages, education and training requirements, and other facts about occupations, as well as articles about labor market trends. While these publications do not include local labor market information, they can provide a good starting place to help students explore job opportunities in their state. The North Carolina SOICC goes a step further by publishing the *Career Choices User's Guide*, an activity book for middle and high schools that draws on information in its tabloid, *Career Choices*.

Higher Education Awareness Program (HEAP)

The South Carolina Commission on Higher Education developed the Higher Education Awareness Program (HEAP) to reach out to eighth graders, encouraging them to stay in school and plan for college. The Commission on Higher Education matches each middle school in the state with a partner two-year or four-year college to help implement the program. HEAP is designed in ten modules that can be integrated into middle school English or history courses or taught as part of a career class. It provides information to students and their parents on opportunities for college financial aid and on what courses to take in high school.

The partner college assigns a staff person (usually from the admissions office or career center) to help middle school counselors plan how to implement HEAP. The college representative also leads some HEAP activities in the classroom and participates in a parent meeting at each school. Business partners are also involved; if a school does not have existing business partnerships, the state Department of Education will help to develop them. Schools have some flexibility in implementing HEAP, but the state requires that all eighth graders complete HEAP activities by February when they register for ninth-grade courses.

HEAP began in seven pilot middle schools in 1992. An evaluation of the program in 1996 (when the students from the pilot sites graduated from high school) indicated that it was highly effective. The Commission on Higher Education compared HEAP participants with students from comparable "control" schools to determine if HEAP had influenced students' post-high school plans. More HEAP graduates said they intended to continue their education, and more had applied to college. As many as 82% of the graduates from HEAP schools had been accepted into postsecondary programs, compared to 67% from the control schools.

HEAP will use sampling techniques to survey its second cohort of participants, which included 18,000 students at 96 middle schools. By its third year of operation, HEAP was in place at all middle schools. The Higher Education Commission will continue to evaluate the program by measuring changes in college-going rates. It will also track HEAP alumni as they move through college to determine how many graduate

4. Help students make the link between academic choices and career options.

Most high schools do a good job of steering middle-income, college-bound students into the courses they need to enter college. Increasingly, schools are trying to help a broader spectrum of students plan their high school curriculum to fit their career aspirations.

A simple step schools can take to help students see the link between their education and career options is to produce "maps" that show the pathways to different occupations — what type of postsecondary education is required for different occupations and which high school courses are prerequisites. Many tech prep programs provide that information for occupations requiring a two-year degree. Better yet are materials that include careers requiring four years of college.

Walhalla High School (in Walhalla, South Carolina) provides its students with clear information that helps them glance at a career cluster (such as business, engineering, or health sciences) and quickly see which occupations require a two-year degree and which require four or more years of college. On the same page, they can see which tech prep or college prep courses to take in grades 9-12 to prepare for each cluster of careers, and which electives might be helpful. In addition to showing students how much postsecondary education they will need for different occupations and which prerequisites to take in high school, this information helps expand their horizons about possible careers within a field like health services by listing unfamiliar as well as common occupations (See sidebar.)

Community colleges also can help students see the connection between academic achievement and career options. Some colleges send counselors to middle schools to lead career and college awareness activities with students (as in the HEAP program, described earlier). Even something as simple as a well-done brochure on college programs can be helpful in setting high school students on the right track. **Tri-County Technical College** in Anderson, South Carolina, for instance, produces brochures on its technical degree programs that are used by local middle schools and high schools. The brochures paint a picture not just of community college programs but also of job opportunities in the local labor market and what preparation students need. For example, the brochure on Industrial Electronics Technology answers these questions:

- What kinds of jobs are available to graduates?
- Which firms have hired recent graduates?
- How much will I earn?
- What opportunities exist for advancement?
- What preparation do I need to enroll?
- What are some of the courses I will take?
- How do I know I'm suited to a career in Industrial Electronics Technology?

5. Develop deep and lasting relationships with students to promote good guidance.

Meaningful guidance is built on a foundation of trust and understanding. Young people will trust adults — whether mentors, teachers, coaches, or others in the community — who they feel know them as whole people and care about them, and that kind of relationship takes time to develop. Too few schools build in the time to nurture those relationships. Those that do encourage deep and lasting relationships between students and adults often do so through advisor groups.

One of the original Alliance for Achievement schools, **Buchholz High School** in Gainesville, Florida, has developed a comprehensive career guidance system that matches each student with an advisor for the entire four years of high school. Advisors help their students think about career decisions and make the right academic choices.

In ninth grade, students explore career options and identify three job clusters that interest them. Each job cluster is associated with a four-year study grid which students use to select classes through high school. Tenth graders use a computer-assisted career exploration program to learn more about the job clusters that interest them, and by the end of tenth grade they select a career major. The career major helps them choose elective classes during junior and senior years.

6. Include opportunities for experiential education.

As discussed in Chapters III and IV, experiences in the adult world — through job shadowing, internship, service learning, interviewing adults working in different occupations — are

invaluable in helping young people think about career options.

7. *Engage parents in students' decisions about high school and career.*
Parents can be extremely influential in helping their children make decisions about school, college, and career. Schools can inform and involve parents through annual conferences to discuss their child's school performance and plans, and through special programs on applying to college and other topics. In rural communities, where parents may have less exposure to emerging careers and high-performance

Walhalla High School — Suggested Courses of Study by Career Area

Career Area:
Engineering

Tech Prep (2 year college)

Grade 9	*Grade 10*	*Grade 11*
– English I	– English II	– English III or Communications
– Math (Career Prep, Algebra I)	– Math (Cat. III)	– Math (Cat. III)
– Physical Science	– Science (Bio., PT)	– U.S. History
– PE or ROTC	– 3 Electives from Cat. I, II, or general	– 3 Electives from Cat. I, II, or general
– Civics and World Geography		
– 1 Elective from Cat. I or general		

College Prep (4 year college)

Grade 9	*Grade 10*	*Grade 11*
– English I (CP, II)	– English II (CP, II)	– English III (CP, II)
– Math (Algebra I, Geometry)	– Math (Geometry, Algebra II)	– Math (Alg. II, Alg. III/Trig.)
– Physical Science	– Biology (CP)	– Chemistry or PT
– PE or ROTC	– Foreign Language	– Foreign Language
– World History	– 2 Electives from Cat. I or general	– 2 Electives from Cat. I or general
– 1 Elective from Cat. I or general		

Career Area:
Health and Human Services

Tech Prep (2 year college)

Grade 9	*Grade 10*	*Grade 11*
– English I	– English II	– English III or Communications
– Math (Career Prep, Algebra I)	– Math (Cat. IV)	– Math (Cat. IV)
– Physical Science	– Science (Bio., PT)	– U.S. History
– PE or ROTC	– 3 Electives from Cat. I, II, III or general	– 3 Electives from Cat. I, II, or general
– Civics and World Geography		
– 1 Elective from Cat. I or general		

College Prep (4 year college)

Grade 9	*Grade 10*	*Grade 11*
– English I (CP, II)	– English II (CP, II)	– English III (CP, II)
– Math (Algebra I, Geometry)	– Math (Geometry, Algebra II)	– Math (Alg. II, Alg. III/Trig.)
– Physical Science	– Biology (CP)	– Chemistry or PT
– PE or ROTC	– Foreign Language	– Foreign Language
– World History	– 2 Electives from Cat. I, III, or general	– 2 Electives from Cat. I, III, or general
– 1 Elective from Cat. I or general		

workplaces, schools may need to educate parents as well as students through joint field trips, parent seminars, and other forms of outreach.

The Alliance for Achievement's **Stone Middle School** has used Parent-Teacher Organization meetings as a forum to get parents involved in their children's academic and career decisions. The schools uses Realizing the Dream, a package of materials designed to help parents and students work together on career and educational planning. Realizing the Dream was developed by ACT and the National Career Development Association and is designed for presentation to parents in a 1-2 hour workshop. Parents receive a guidebook designed to help them be more effective career advisors; students receive their own book that guides them in exploring decisions about their future. The guidebooks are designed to be used at home over the weeks and months following the workshop, and they contain parallel topics and activities that provide a common basis for discussion between parents and teenagers.

Grade 12	*Job fields you might expect to enter*
– English IV or Communications – Government and Economics – 4 Electives from Cat. I, II, III, or general	– Computer technician – Electric motor repair – Telephone/cable installer – Electrical technician (any industry) – Sound technician – Heating/refrigeration/AC

Grade 12	*Job fields you might expect to enter*
– English IV (CP, AP) – Government and Economics (CP) – 1 Math (Alg. III/Trig., Calculus) – 2 Electives from Cat. I, IV, or general – Engineering graphics	Engineer: Aerospace, Agriculture, Ceramic, Chemical, Civil, Nuclear, Industrial, Marine, Mechanical, Electrical & electronics, Petroleum, Pollution control, Metallurgical, Architectural

Grade 12	*Job fields you might expect to enter*
– English IV or Communications – Government and Economics – 4 Electives from Cat. I, II, III, IV, or general	– Medical technician – Dental hygienist – LPN/RN, EMT – Legal assistant – Home health aid – Cosmetologist – Child care specialist – Law enforcement officer

Grade 12	*Job fields you might expect to enter*
– English IV (CP, AP) – Government and Economics (CP) – Math (Alg. III/Trig., Calculus) – 4 Electives from Cat. I, III, IV or general	Physical therapist, Food & drug inspector, Dietician, Home economist, Medical doctor,* Pharmacist,* Law enforcement officer, Psychologist,* Athletic trainer, RN/BS nursing, Medical technologist, Occupational therapist, Social worker, Teacher, Park ranger, Chiropractor, Optometrist ** advanced study required*

The **ATOMS** (Adventures in Technology = Options in Math and Science) program (described on page 22) also encourages parents to become involved in their children's high school and career decisions. Parents are invited to all ATOMS activities, and they receive a newsletter to keep them informed about program activities. The newsletter also provides information about educational requirements for tomorrow's jobs and stresses the importance of taking high-level courses in mathematics and science.

8. Provide opportunities to dream and individualized guidance.

Career guidance should give students structured opportunities to dream and provide the tools to help them realize their dreams. At its best, a guidance program helps young people think about their personal strengths and interests and helps them make decisions about high school and postsecondary education that will keep their options open. The Omaha Work Keys program, described in Chapter II, is an example of a district-wide effort to provide students with individualized counseling on career options and their related academic strengths and deficiencies.

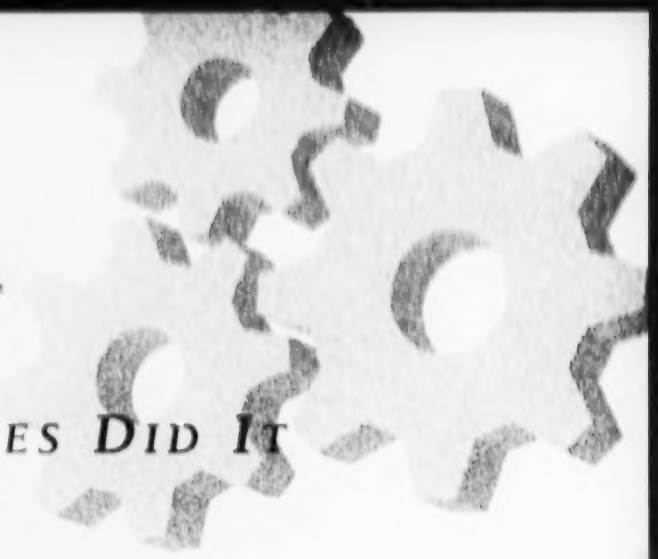
Two other examples come from the Alliance for Achievement. As part of their involvement in the Alliance, **Stone Middle School** in Wiggins, Mississippi, and **Western Middle School** in

Louisville, Kentucky, put in place individualized guidance programs to help eighth graders start thinking about careers and make informed choices about high school. At Stone Middle School, all eighth graders now take a test which identifies career-related interests and measures academic strengths and weaknesses related to different types of occupations. Test results are interpreted individually by the guidance counselor, and students also discuss them in their social studies class.

"Robert" is an example of a student who benefited from career testing and counseling. Robert was a star player on Stone Middle School's basketball team, and was unable to see a future for himself outside of the game, talking only of basketball whenever he was asked about his aspirations. But the career interest inventory test showed that he had a strong interest in botany and horticulture. Staff at the school's career center supported this new interest with information about related careers, their salaries, and what courses he should take in high school. While he still loves basketball, Robert now has a much broader picture of the academic and career opportunities open to him.

In Louisville, eighth graders must choose whether to attend their neighborhood high school or apply to one of the magnet high schools in the Jefferson County School District. In the past, most students from the isolated, low-income neighborhood where Western Middle School is located chose their neighborhood high school. Now, all eighth graders take a state career interest inventory test and discuss high school plans with their advisor. All eighth graders at Western Middle School also participate in at least one job-shadowing experience, described in Chapter III. Partly as a result of these activities, the percentage of Western Middle's 1996 graduates who attend competitive magnet high schools has risen to around 30%.

VI. Building School-Employer Partnerships:
How Three Communities Did It



How can we get a partnership started in our community?
What kinds of resources do we need?
How can we motivate people to become involved?

This report has described numerous school programs that rely on partnerships with employers. Those partnerships can take many forms. In some communities business and industry has pushed for school reform, motivated by the demands of the high-performance workplace and the concern that too many young people graduate from high school unprepared for the workplace or for college. In other communities, the school-to-work movement has motivated employers and school districts to join forces to create new learning experiences for students. In still other places, individual schools have reached out to form partnerships with business and industry. And some community colleges have spearheaded partnerships between regional businesses and secondary schools, often through a Tech Prep consortium.

For schools that are just getting started in developing relationships with employers, it may be helpful to examine the evolution of three successful partnerships with different histories, different leadership, and varying levels of resources.

Wilmington: Starting Small... Then Growing

Wilmington, North Carolina, began its career awareness program, Career Connections, at the four schools involved in the Alliance for Achievement plus a feeder elementary school. While originally small in scope, the program has evolved into a two-county School-to-Work partnership. Career Connections offers a model of how school personnel can implement an idea on a small scale and then attract funding and support to expand the program beyond its original bounds.

Career Connections

Career Connections began from the bottom up, led by the Alliance for Achievement team and in particular team leader Pat Martin, Career

Development Coordinator at New Hanover High School. While the initial impetus for a career awareness program came from Pat, she had help from two strongly committed corporate representatives on the Alliance team: Royce Angel of BellSouth (now with the University of North Carolina at Wilmington) and Nicoa Dunne of General Electric. Their input helped Pat and the rest of the Alliance team develop a set of career activities that became known as Career Connections. Career Connections has two components: a year-long internship program for seniors and a partnership program involving schools and employers.

The internship program was designed by Pat Martin, through a fellowship from the National Society for Experiential Education. The internship takes the place of one class during a student's senior year, and involves 5-10 hours each week working in a public agency or corporation of the student's (and employer's) choice. A mentor at the worksite helps the student set up objectives for the semester. The following semester, the student prepares a portfolio of his or her learning experiences. Throughout the year, students meet weekly with a school faculty member to discuss and reflect on their progress toward their goals.

The school/business partnership was put into place in the beginning of the 1995-96 school year with the help of a small supplementary Alliance grant from The Pew Charitable Trusts. Alliance team member Nicoa Dunne and Brian Coughlan of Carolina Power & Light were the original co-chairs of the partnership. Both of their employers encouraged, and provided leave time for, community involvement. The program started small, with six partnerships formed among the four Alliance schools (two middle schools, a high school, and the local community college) and a feeder elementary school. Two businesses formed partnerships with the high school. The intention was that the participating businesses would help to recruit more partners when the program expanded. (Classroom activities that resulted from these partnerships are described on pages 22-23.)

The Chamber of Commerce and the Board of Education endorsed Career Connections, although neither committed funds to the program. Brian Coughlan credits the Chamber's promotion of the program for his company's original involvement and believes that the Board of Education's support was helpful in legitimizing the program. Neither the Board nor the Chamber played any governance role, except for the general oversight that the Board of Education has over all school functions. For the first year of the program, all of the financial support came from the two modest grants awarded through the Alliance for Achievement, and governance came from the program's co-chairs and steering committee.

The Alliance grant ended in 1996, and with it the financial support for Career Connections. In addition, Nicoa Dunne's involvement with the project ended when GE downsized and asked her to resign from Career Connections because the time commitment was too intensive. The team began looking for ways to keep the partnership alive and developed a plan for its continuance.

Cape Fear Partners for Career Success

In 1996, Career Connections became the Cape Fear Partners for Career Success (CFPCS), a two-county school-to-work consortium. New Hanover and Pender Counties joined forces to apply for a JobReady (North Carolina's school-to-work program) Local Partnership grant, which included an expanded Career Connections as well as stronger partnerships with the community college and the development of articulation agreements (middle school-high school and high school-community college). A planning grant was awarded in the spring of 1996, and the initial funds helped support six new business/school partnerships. Bob Philpott, Dean of Instruction at Cape Fear Community College, has become chair of CFPCS. The governing board includes representatives from businesses, schools, and local employment-related agencies. The partnership's success in obtaining grants and expanding to a second

county have ensured that what was once a small, low-budget effort will continue and grow.

Pat Martin had limited funds to work with and lacked the position of authority that many successful school reformers have when they begin. But she says that one or two people with energy and ideas, who are willing to spend time continually advocating and promoting a program, can go a long way toward making changes happen. "It's amazing what you can do, if you believe in what needs to happen," she says. She also credits the Alliance with providing validity to the idea of linking students with employers. The external authority and funding provided by the Alliance attracted the attention and approval of those in positions of power within the school system and community.

Fort Worth: Citywide Approach

Fort Worth's Project C[1] is an ambitious, district-wide partnership involving schools, employers, and the community. The Project encompasses many different programs to promote academic achievement, equity, and career awareness. It reaches students of all age levels and interests and directly involves many area businesses and six or seven thousand employees.

Project C[1] was launched in 1989, when the Fort Worth superintendent and members of the school board began searching for ways to build a system of high-performance schools. They met with the Chamber of Commerce and other business leaders and began to form a partnership aimed at defining success in the workplace and translating it to classroom instruction. Twenty-four CEOs, motivated by a desire to improve the school system, committed company resources and their own time. The partners were united around clear goals: to define success in the workplace, to establish performance standards, and to link classroom instruction to real world applications.

Initial Assessment and Program Development

The new partnership began its work with a survey of 300 local businesses, asking employees at all levels to analyze the skills required in their jobs. Over 3,500 employees completed the survey over a ten-month period. The information was studied carefully and became the basis for C[1]'s program development, as it indicated how the skills learned in school have practical applications in the workplace. The results were also cross-referenced by skill, and distributed in book form to teachers for use in the classroom.

Program development was the next step. Members of the partnership divided into work teams, including an oversight steering committee, program development teams, and implementation teams. In time, Project C[1] became the umbrella for a number of initiatives designed to bring about long-term change, including:

- Applied learning, in which teachers collaborate with employers to link instruction with the real world (described on page 23);
- Equity 2000, a national effort of The College Board that seeks to increase the number of economically disadvantaged and minority students who attend college;
- Vital Link, which provides workplace learning experiences to all of the middle school students in the district (described on page 14);
- Technology education, which involves changing the curriculum to integrate vocational and academic education;
- Transforming student assessment, through the Portfolio Project and the New Standards Project;
- The High Performance Schools Project, a joint venture with JC Penney and the

National Alliance of Business, which helps schools initiate restructuring through school-based management; and

- The Connections Project, which provides educational, social, and health services for young children and their families at local school sites.

Governance and Staff

Unlike many collaboratives, the Fort Worth partners did not establish a governing entity separate from the school system or the Chamber of Commerce. Rather, people involved in the partnership serve on committees which make decisions about different programs. Staff support is provided by employees at the school district and the Chamber. Although several people at each organization work primarily on partnership activities, they are employees of the school district or the Chamber rather than the partnership. Most funding comes from the existing budgets of the schools, Chamber, or employers.

While the staff members at the schools and the Chamber work together to keep the programs running, they play different roles. The Chamber of Commerce provides a link between the schools and the business community, promoting business involvement and helping businesses communicate with the school. The school district adjusts its programs and policies to respond to the needs that businesses articulate.

Recent Initiatives and Results

In 1996, the partners conducted another job analysis, going back to about one-third of the companies originally surveyed and adding several new industries. This time, human resource directors were asked to profile four or five jobs from within the company, and CEOs also developed profiles for the same jobs. In analyzing the responses, the partners found that technology needs have changed and that creativity, speaking and listening, and problem-solving skills are even more important than they were in 1990. These results will shape future program development.

Development groups still meet monthly to assess progress, make adjustments, and continue to design and implement new strategies. The superintendent who helped to initiate the program has left the district, but his successor is highly supportive of and involved with the initiative. Teachers, members of the Chamber of Commerce, CEOs, representatives from higher education institutions, and other civic leaders also continue to participate actively. The Board of Education provides resources for the various projects, as do corporations and local and national foundations.

A longitudinal study follows each seventh-grade student in the district after completion of job shadowing which is many students' first exposure to the C^3 program. The study has found that members of the oldest cohort (now in eleventh grade) are taking higher-level classes than students not exposed to C^3 activities and they are less likely to drop out of school.

Future plans for C^3 include extending job shadowing to fifth-grade students. The logistical problems of working with 64 different schools presents a challenge, however, which will take some time to work out.

Guilford County: Community College Partnership

Guilford County's College Tech Prep program is one of many offered in schools across North Carolina. But Guilford County's program is unusual in that it relies on true collaboration between the community college and the school district, with the community college providing much of the leadership. Employers are deeply involved, not just in sponsoring workplace learning opportunities but also in curriculum development, governance, and financial support.

Guilford County's program grew out of a series of breakfast meetings between Don Cameron, the president of Guilford Technical Community College, and Jerry Weast, the superintendent of the county school system. Both shared a commitment to the idea of helping all students achieve, and in particular the "neglected majority" who do not go on to receive a four-year degree after high school. They envisioned a course of study that would replace the general education track, prepare students for well-paying technical jobs after completing two years of apprenticeship or a community college technical degree, and also allow them to pursue a university degree if they chose.

Guilford County, in central North Carolina, contains two mid-size cities — Greensboro and High Point — and two interstate highways as well as an international airport. Many manufacturing companies are located in the region, drawn by these amenities as well as the mild weather, low cost of living, and wide-open spaces. While these companies offer high-paying jobs, they have historically been unable to employ many local high school or even community college graduates because of weak technical skills and inadequate math and science preparation. Local businesses, therefore, were eager to support any initiative that would improve the skills of local students. The Chamber of Commerce willingly became a partner in the formation of a College Tech Prep program.

The College Tech Prep Program

When Guilford County introduced the College Tech Prep program in 1994, it eliminated general education classes — all students now choose either the College Prep program or College Tech Prep. The College Tech Prep program spans the four years of high school plus two years in community college or apprenticeship. Some College Tech Prep courses automatically transfer for community college credit, and two years of a foreign language are the only additional courses necessary to meet admission requirements for the University of North Carolina system. Academic teachers have designed integrated lesson plans that apply academic skills to the related College Tech Prep courses, using special software developed by Instructional Management System (IMS) that was already used in the college's technical classes.

Collaboration

The College Tech Prep model, endorsed by the state Board of Education and the Community College Board, is used by many of North Carolina's school districts. But Guilford County remains unique in the extraordinary degree of community college leadership and business support afforded the program. The support is not only financial, although donations of money and materials have been substantial. The community college provides staff support, training for high school technical teachers, materials for labs, and the continued leadership and promotion of the program by its president. Businesses have provided, in addition to large sums of money, sponsorship for apprenticeship and job-shadowing programs.

The program operates as a thoroughly collaborative effort. Many communities have career awareness programs that link employers to the schools, but often one organization provides staffing and receives and distributes financial support. Guilford's College Tech Prep program is supported by staff from the community college, the public schools, and the Chamber of Commerce. While housed separately in their respective institutions, the staff members all consider that they work for all of the organizations involved in the partnership, not just their own official employer. Another example of the program's remarkable level of collaboration is that all of the funding for the program is applied for, received, and administered jointly, through the college and the public schools. The superintendent and the college president make joint appearances whenever they promote the program to other organizations.

Employer Involvement

The Guilford Workforce Investment Council functions as a board of directors for the College

Tech Prep program. The Council was formed in early 1996 to link the many agencies concerned with workforce development in the county. It meets monthly to oversee and coordinate local education and training agencies. When the Council was formed, 33 companies were invited to participate; a condition of membership was the personal involvement of the chief executive officer. Twenty-eight CEOs accepted the challenge and became active members of the Council.

The Workforce Investment Council oversees Business and Industry Councils in each occupational area of the College Tech Prep program. These currently include metalworking, automotive technology, banking and finance, and chemical process manufacturing, with health care, furniture manufacturing, construction, and textiles in the planning stages. These councils, comprised of representatives from employers, Guilford Tech, and the high schools, help plan curriculum for the high schools and community college.

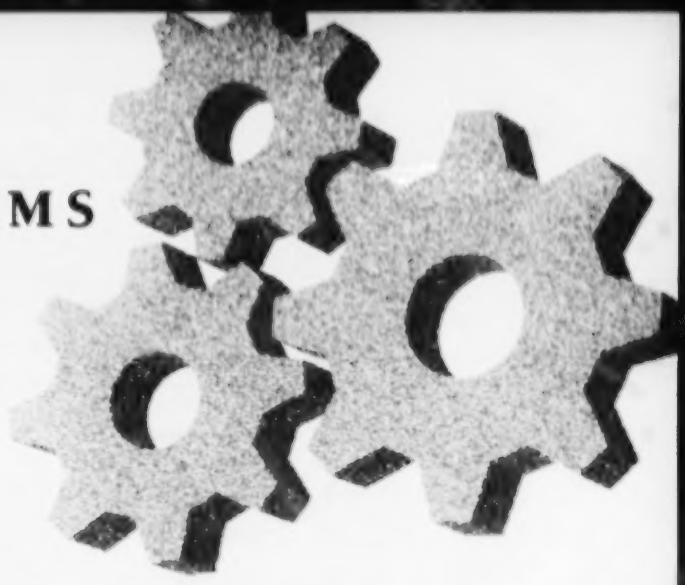
In addition to the community college, the public schools, and individual employers, the Greensboro and High Point Chambers of Commerce and the Greensboro Development Corporation have been influential in developing and sustaining the College Tech Prep program. The two Chambers, with their strong ties to business and industry, have brought the program to the attention of local employers. They have jointly hired a staff member to provide support to the partnership and are planning to merge their education committees to provide integrated support. The Greensboro Development Corporation mobilized its members — the CEOs of the area's largest companies — to pledge $3.1 million to the College Tech Prep program, supporting 225 apprenticeships over three years.

Additional funds have come from individual employers. For example, Ciba Geigy and Dow Corning have donated funds for professional development and youth apprenticeships, and Metals Manufacturing Companies committed $9,500 for each youth apprenticeship student they sponsor. AMP Inc., which makes electrical connectors, also committed money to the youth apprenticeship program. In addition, the county has received federal funds through North Carolina's JobReady School-to-Work program — the $220,000 implementation grant awarded in March of 1996 was the largest of all of the grants the state awarded to individual school systems.

A seminal event in winning employer support was a December 1995 meeting sponsored by the Greensboro Development Corporation in which journalist Hedrick Smith spoke to 200 business leaders. Smith has written extensively about the global economy and the changing workplace. Guilford Tech President Don Cameron believes Smith's eloquent presentation convinced many CEOs to get involved in the tech prep program.

A final unique element in Guilford's program is the "contract" between the schools and the employer community, developed by the Workforce Investment Council. For each level from elementary school to college, it lays out responsibilities of the schools and of employers in preparing young people for the workplace. In the elementary grades, for instance, the schools have pledged to introduce students to a variety of careers through classroom materials and activities; industry partners have pledged to provide materials, guest speakers, and field trips. In the middle grades, schools provide career exploration courses and guide students in preparing a career development plan; industry partners provide teacher internships, job-shadowing, and professional development as well as materials, guest speakers, and field trips. In high school and college, schools provide coordination for work-based learning and a curriculum that focuses on academic and employability skills, while businesses offer internships, apprenticeships, and specialized equipment.

INDEX OF PROGRAMS

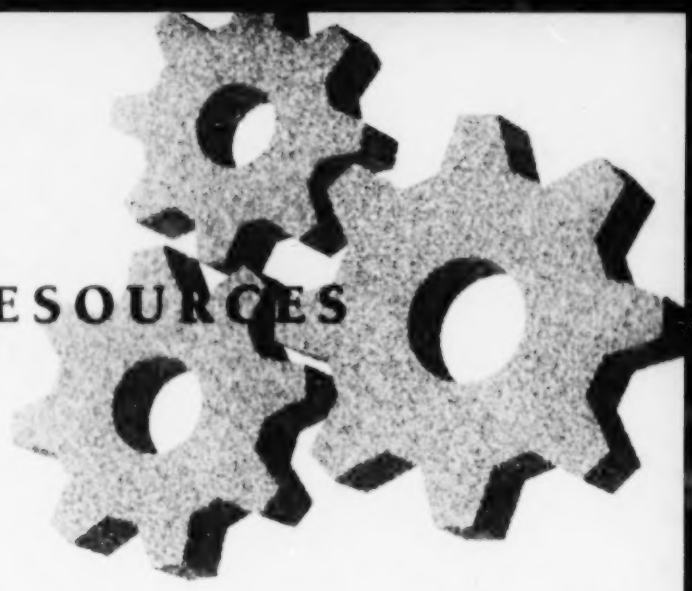


PROGRAM/SCHOOL	KEY ELEMENTS *(page references)*
Albert G. Prodell Middle School *Long Island, NY*	• Workplace visits for middle school students *(page 14)* • Service learning for middle school students *(page 16)*
ATOMS (Adventures in Technology= Options in Math and Science) *Newport News, VA*	• Classroom activities in middle school led by adults working in technical occupations *(page 22)* • Parental involvement in career awareness *(page 31)*
Buchholz High School *Gainesville, FL*	• Linking academic choices and career options *(page 29)*
Cabarrus County *North Carolina*	• Local SCANS study *(page 12)*
Career Connections *Wilmington, NC*	• Classroom activities (grades 5-12) led by adults from businesses that partner with schools *(page 22)* • Evolving school-to-work partnerships *(page 33)*
Exploring Career Decisions *North Carolina*	• Classroom activities to learn about the local economy *(page 28)*
Guilford County College Tech Prep *Greensboro-High Point, NC*	• School-to-Work program with strong community college and employer involvement *(page 36)*
Haut Gap Middle School *Johns Island, SC*	• Speakers in the classroom *(page 21)* • Infusing career awareness into the curriculum *(page 27)*
High Hopes, Long Odds	• Study of young people's career aspirations and academic achievement *(page 25)*

Program/School	Key Elements *(page references)*
Higher Education Awareness Program (HEAP) *South Carolina*	• Curriculum that encourages eighth graders to stay in school and go to college *(page 28)*
Kentuckiana Education and Workforce Institute *Jefferson County, KY*	• Comprehensive business-education partnership with summer internships for teachers *(page 9)* • Youth apprenticeship *(page 19)*
Martin Luther King Jr. Middle School *San Francisco, CA*	• Service learning for middle school students *(page 16)* • Classroom activities to learn about the local economy *(page 27)*
Metalworking Connection *Rural Arkansas*	• Youth apprenticeship *(page 18)*
National Career Development Guidelines	• Competency-based guidelines for career guidance, ages K-adult *(page 26)*
Norfolk Vocational Advisory Council *Norfolk, VA*	• Annual 2-day Tech Prep institute for teachers *(page 10)*
Northwest Suburban Career Cooperative *Palatine, IL*	• Summer internships for high school teachers *(page 9)*
Omaha 2000/Omaha Work Keys	• Study of competencies required in local workplaces; assessment of high school students in relation to workplace competencies *(page 11)*
PACE (Partnership for Academic and Career Education) **Tech Prep Consortium** *Pendleton, SC*	• Links schools with speakers from local business *(page 21)*
Project C³ (Communities, Corporations, Classrooms) **and Vital Link Program** *Fort Worth, TX*	• SCANS-type study of local workplaces *(page 11)* • Vital Link Program: Internships for middle school students and teachers *(page 14)* • Applied learning *(page 23)* • Comprehensive business-education partnership *(page 35)*
REAL Enterprises	• Experiential curriculum to introduce high school and community college students to a career as an entrepreneur *(page 24)*

Program/School	Key Elements *(page references)*
SCANS (Secretary's Commission on Achieving Necessary Skills)	• National study of skills needed to succeed in today's workplace, with recommendations to schools and employers *(page 4)*
School and Main *Boston, MA*	• Seminars to promote dialogue between educators and employers *(page 10)*
School-Work PLUS	• SCANS-type study conducted by high school students *(page 15)*
Siemens Corporation	• Youth apprenticeship *(page 18)*
St. John's High School *Johns Island, SC*	• Youth apprenticeship *(page 17)*
Stone County High School *Wiggins, MS*	• Workplace visits for high school students *(page 14)*
Stone Middle School *Wiggins, MS*	• Involving parents in career guidance *(page 31)* • Individualized career and educational guidance *(pages 31-32)*
Triangle Workforce Information Group (TWIG) *Durham-Chapel Hill, NC*	• Workplace visits for high school teachers *(page 8)*
Tri-County Technical College *Pendleton, SC*	• Informative brochures for technical careers *(page 29)*
Walhalla High School *Walhalla, SC*	• Materials on high school courses and postsecondary education required for different occupations *(pages 29-31)*
Western Middle School *Louisville, KY*	• Job shadowing for middle school students *(page 14)* • Individualized career and educational guidance *(pages 31-32)*

APPENDIX: CONTACTS AND RESOURCES



PROGRAMS PROFILED

Albert G. Prodell Middle School

Joanne Urgese, *Community Service Coordinator*
Randall Road
Shoreham, NY 11786
(516) 821-8210

ATOMS
(Adventures in Technology = Options in Math and Science)

Judy Remsberg, *Director*
Thomas Nelson Community College
Post Office Box 9407
Hampton, VA 23670
(757) 825-2982

Buchholz High School

Susan Culbert, *Assistant Principal*
5510 NW 27th Avenue
Gainesville, FL 32606
(352) 336-2702

Cabarrus County Schools

Judy Misenheimer
Post Office Box 388
Concord, NC 28026
(704) 786-6191

Career Connections

Bob Philpott, *Dean of Instruction*
Cape Fear Community College
411 North Front Street
Wilmington, NC 28401-3993
(910) 251-5109

or

Pat Martin, *Career Development Coordinator*
New Hanover High School
1307 Market Street
Wilmington, NC 28401
(910) 251-6004

Exploring Career Decisions

June Atkinson, *Director of Vocational and Technical Education Services*
North Carolina Department of Public Instruction
301 North Wilmington Street
Raleigh, NC 27601-2825
(919) 715-1626

Guilford County College Tech Prep

Gerald Pumphrey, *Director of Workforce Preparedness*
Guilford Technical Community College
Post Office Box 309
Jamestown, NC 27282
(910) 334-4822 x2608

or

Sylvia Anderson
Guilford County Schools
120 Franklin Boulevard
Greensboro, NC 27401
(910) 370-8358

Haut Gap Middle School

Roberta Frasier, *Principal*
1861 Bohicket Road
Johns Island, SC 29455
(803) 559-6418

High Hopes, Long Odds

Indiana Youth Institute
3901 North Meridian Street, Suite 200
Indianapolis, IN 46208-4046
(317) 924-3657

Higher Education Awareness Program (HEAP)

Mike Raley, *Director*
South Carolina Commission on Higher Education
1333 Main Street, Suite 200
Columbia, SC 29201
(803) 737-2260

Kentuckiana Education and Workforce Institute

No longer in operation.
For information on Teacher/Business Exchange, contact Sharon Kauka at (502) 485-3122.

Martin Luther King Jr. Middle School

James Taylor, *Principal*
350 Girard Street
San Francisco, CA 94134
(415) 330-1500

Metalworking Connection

Karen Cundiff, *Program Director*
Metalworking Connection, Inc.
Youth Apprenticeship Program
Post Office Box 537
Arkadelphia, AR 71923
(501) 246-0320

Norfolk Vocational Advisory Council

Jane Hosay
Norfolk Public Schools, Adult and Vocational Department
800 East City Hall Avenue
Norfolk, VA 23510
(757) 441-2957

Northwest Suburban Education-to-Careers Partnership

Sally Griffith, *Executive Director*
721 West Algonquin Road
Arlington Heights, IL 60005
(847) 758-2380

Omaha 2000

Connie Spellman, *Vice President for Education*
Greater Omaha Chamber of Commerce
1301 Harney Street
Omaha, NE 68102
(402) 346-5000 x234

Partnership for Academic and Career Education (PACE)

Johnny Wallace
Tri-County Technical College
Post Office Box 587
Pendleton, SC 29670
(864) 646-8361 x2381

Project C³
(Communities, Corporations, and Classrooms)

Debby Russell, *Executive Assistant to the Associate Superintendent*
Fort Worth Independent School District
100 North University Drive
Fort Worth, TX 76107
(817) 871-2313
or
Tasa Rice
Manager, Business/Education Partnerships
Fort Worth Chamber of Commerce
777 Taylor Street, Suite 900
Fort Worth, TX 76102
(817) 336-2491 x257

REAL Enterprises

Rick Larson, *National Director*
115 Market Street, Suite 320
Durham, NC 27701
(919) 688-7325

St. John's High School

Harrison Washington, *Principal*
1518 Main Road
Johns Island, SC 29455
(803) 559-6400

School & Main

Betsy Baker, *Manager*
750 Washington Street
NEMCH No. 328
Boston, MA 02111
(617) 636-9151

School-Work PLUS

Anderson D. Clark, *President*
READ America
103 North Duke Street
Post Office Box 1485
Shepherdstown, WV 25443
(304) 876-3992

Siemens Corporation

John Tobin, *Director of Applied Technology and Training*
1301 Avenue of the Americas, 44th Floor
New York, NY 10019
(212) 258-4046

Stone County Middle School

Kathleen Kirker, *Counselor*
532 East Central Avenue
Wiggins, MS 39577
(601) 928-4876

Stone County High School

Steve Chambers, *Assistant Principal*
400 East Border Avenue
Wiggins, MS 39577
(601) 928-5492

Triangle Workforce Information Group

Chuck Nolan
The Center for Educational Leadership
School of Education
University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-3500
(919) 932-6544

Tri-County Technical College

Post Office Box 587
Pendleton, SC 29670
(864) 646-8361 x2500

Walhalla High School

151 Razorback Lane
Walhalla, SC 29691
(864) 638-4582

Western Middle School

Linda Huber
Middle Schools Project Business Liaison
2201 West Main Street
Louisville, KY 40212
(502) 485-8345

Other Resources

ACT

Post Office Box 168
Iowa City, IA 52243
(800) 553-6244

ACT developed and sells the *Work Keys* system, used by Omaha 2000 and other organizations around the country to assess the skills of workers and students, and the *Realizing the Dream* program, which helps parents and students work together to plan for higher education and careers. Formerly known as the American College Testing Program, ACT has changed its name to better reflect its range of programs and services to students, schools, and colleges.

American School Counselors Association

801 North Fairfax Street, Suite 310
Alexandria, VA 22314
(703) 683-2722

The American School Counselors Association has worked with the National Occupational Information Coordinating Center to promote the *National Career Development Guidelines* and raise the profile of career guidance in the schools.

Council for Aid to Education

342 Madison Avenue, Suite 1532
New York, NY 10173
(212) 661-5800

The Council for Aid to Education is a national nonprofit organization whose mission is to enhance corporate support for education. It has published a series of reports on business-school partnerships. One recent report, *Sustaining Change in Schools: A Role for Business* by Diana W. Rigden (1994), presents a good framework for ways businesses can support school reform through money donations, human and material resources, and advocacy. It discusses roles businesses can play at a variety of levels from the classroom to the school, the district, the community, and educational policy.

National Occupational Information Coordinating Committee (NOICC)

2100 M Street NW, Suite 156
Washington, DC 20037
(202) 653-7680

As noted, NOICC has produced *National Career Development Guidelines*. NOICC has an affiliate in each state, often called the State Occupational Information Coordinating Committee, or SOICC. SOICCs are required to provide at least two products to schools, JTPA Private Industry Councils, and other education and training programs: an Occupational Information System (OIS) and a Career Information Delivery System (CIDS).

The Occupational Information System (OIS) is a database of labor market information, including the number of jobs in each occupation and industry, the number of new workers in each occupation (based on graduation rates from education and training programs), and other information such as which firms hire for which occupations and wage rates by occupation. Typically, the database is on computer and available for the state, metropolitan areas, and JTPA Service Delivery Areas; in some states, data is also available for community college districts or other substate regions. It is designed for use by program planners and generally requires training in how to use it.

The Career Information Delivery System (CIDS) also typically takes the form of a computerized database. Unlike Occupational Information Systems, Career Information Delivery Systems are designed to be user-friendly and are available to students and counselors in many middle schools, high schools, and community colleges. Some states, including North Carolina, develop their own software for Career Information Systems while others rely on Choices, COIN, GIS, or other nationally produced software. All these systems include three components:

- Self-assessment/exploration — the student enters information on interests, aptitudes, desired level of education, and other factors and gets a list of compatible occupations;
- Occupation-specific information — provides information on job duties and requirements of specific occupations as well as working conditions, earnings, and economic outlook; and
- Education and training information — provides information on postsecondary schools that offer training for particular occupations, along with information on admissions, tuition, and financial aid.

National Society for Experiential Education

Sally Migliore, Executive Director
3509 Haworth Drive, Suite 207
Raleigh, NC 27609
(919) 787-3263

The NSEE is a source of information about service learning, youth apprenticeship, internships, and other programs that involve students in work-based learning.

ALLIANCE FOR ACHIEVEMENT
Advisory Panel

Robert Penn, *Chair*
Vanguard Management Group, Inc.
Chicago, IL

Wendy Best, *Program Officer*
BellSouth Foundation

Tamar Datan, *Program Officer*
The Pew Charitable Trusts

Katie Dorsett, *Secretary*
North Carolina Department of Administration

Andy Fisher, *Program Officer*
DeWitt Wallace-Reader's Digest Fund

E.K. Fretwell, *Chancellor Emeritus*
UNC-Charlotte

Bobbi Kennedy, *Vice President for Continuing Education*
South Carolina ETV Network

Howard Maniloff, *Professor*
UNC-Chapel Hill School of Education

Gayle Williams, *Executive Director*
Mary Reynolds Babcock Foundation

MDC

Expanding The Economy • Developing The Workforce

400 Silver Cedar Court, Suite 300, Chapel Hill, NC 27514

P.O. Box 17268, Chapel Hill, NC 27516-7268

919.968.4531 Fax 919.929.8557

www.mdcinc.org